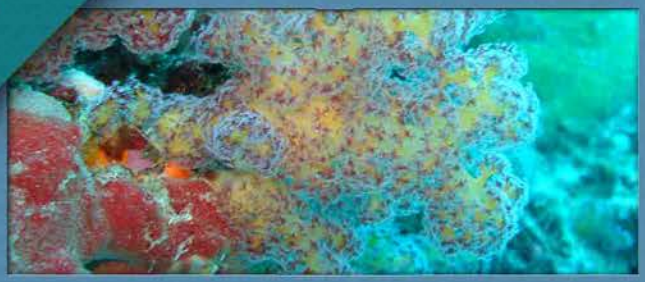
Bay of Bengal Large Marine Ecosystem Project



Marine Managed Areas workshop report
Penang, Malaysia, 18-19 January, 2011

BOBLME-2011-Ecology-06

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Bay of Bengal Large Marine Ecosystem Project Workshop

"The Status of Marine Managed Areas in the Bay of Bengal"
18-19 January 2011, Penang, Malaysia

Workshop Report

Prepared by

K. Kuperan Viswanathan
Northern University of Malaysia

M. K. Tan and N. Ahmad Fatan
The WorldFish Center
Penang, Malaysia

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The financial support of the BOBLME project toward the organization and running of the workshop is kindly acknowledged here. The participation and active inputs of the country delegates contributed to the richness of the workshop. The excellent support and logistics facilities provided by the WorldFish Center, Penang, Malaysia is greatly appreciated.

ABBREVIATIONS

ADB	Asian Development Bank
AECEN	Asian Environmental Compliance and Enforcement Network
ACRBC	ASEAN Centre for Biodiversity Conservation
ASEAN	Association of South-East Asian Nations
BOB	Bay of Bengal
BOBP-IGO	Bay of Bengal Project - Intergovernmental Organization
BOBLME	Bay of Bengal Large Marine Ecosystem
BOBP	Bay of Bengal Programme for Sustainable Fisheries Development
BIMSTEC	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
CBD	Convention on Biological Diversity
CCRF	Code of Conduct for Responsible Fisheries
CITES	Convention on International Trade in Endangered Species
CMS	Convention on the Conservation of Migratory Species
CMFRI	Central Marine Fisheries Research Institute
CLMRE	Coastal Large Marine Resource Environments
CORIN	Costal Resources Institute, Thailand
CTI	Coral Triangle Initiative
DoE	Department of the Environment
ECA	Ecologically Critical Area
EAF	Ecosystem Approach to Fisheries
EEZ	Exclusive Economic Zone
EASP-COBSEA	East Asia's Seas Program – Coordinating Body on the Seas of East Asia
EPA	Environmental Protection Agency
FAO	Food and Agriculture Organization of the United Nations
FSP	Full-sized project
GDP	Gross domestic product
GEF	Global Environment Facility
GESAMP	Group of Experts on the Scientific Aspects of Marine Environmental Protection
GIS	Geographic Information System
GoM	Government of Maldives
IAEA	International Atomic Energy Agency
ICRI	International Coral Reef Initiative
ICSF	International Collective in Support of Fish Workers
IOGOOS	Indian Ocean Global Ocean Observing System
IOM	International Organization for Migration
IOSEA	Indian Ocean South East Asian
IOTC	Indian Ocean Turtle Commission
IUCN	International Union for the Conservation of Nature
IW learn	International Waters Learning Program
LME	Large Marine Ecosystem
MoEF	Ministry of Environment and Fisheries
MARPOL	International Convention for the Prevention of Pollution from Ships
MPA	Marine Protected Area

MMA	Marine Managed Area
MMAF	Ministry of Marine Affairs and Fisheries
NACA	Network of Aquaculture Centers in Asia
NGO	Non-Governmental Organisation
NIOT	National Institute of Ocean Technology
NOAA	National Oceanic and Atmospheric Administration
PEMSEA	Partnerships in Environmental Management for the Seas of East Asia
RAMSAR	Convention on Wetlands of International Importance
SAARC	South Asian Association for Regional Cooperation
SAM	Special Area Management
SASP-SACEP	South Asia Seas Programme and South Asia Co-operative Environment Programme
SAUP	Sea Around us Project
SACEP	South Asia Co-operative Environment Programme
SEAFDEC	South-East Asian Fisheries Development Centre
TNC	The Nature Conservancy
RCU	Regional Coordination Unit
SAP	Strategic Action Plan
SAUP	Sea Around Us Project
SCS	South China Sea
TDA	Transboundary Diagnostic Analysis
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WCMC	World Conservation Monitoring Centre
WDPA	World Database on Protected Area
WHC	World Heritage Convention
WWF	World Wildlife Fund

1.0 BACKGROUND

This report presents the proceedings of the Bay of Bengal Large Marine Ecosystem Project Workshop on "The Status of Marine Managed Areas in the Bay of Bengal" held on 18-19 January 2011, at Penang, Malaysia. The workshop was hosted by the WorldFish Center, Penang, Malaysia. The workshop was attended by Marine Protected Area specialists and practitioners from the eight BOBLME countries namely, Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand. These are the countries working together through the Bay of Bengal Large Marine Ecosystem (BOBLME) Project. A few resources persons and a facilitator supported the proceedings of the workshop.

The BOBLME project hopes to lay the foundations for a coordinated programme of action designed to improve the lives of the coastal populations through improved regional management of the Bay of Bengal environment and its fisheries.

The workshop focused on the Subcomponent 3.2 (Marine Protected Areas in the Conservation of Regional Fish Stocks) to develop a better understanding of and promote a more comprehensive approach to the establishment and management of marine protected areas (MPAs) and fish refugia for sustainable fisheries management and biodiversity conservation objectives. Among the activities envisaged in the subcomponent are the following:

(i) The establishment of a working group of regional experts in MPAs/fish refugia

(ii) Inventory and updating status of existing MPAs/fish refugia in the BOBLME

(iii) A gap analysis to assess effectiveness of existing system of MPAs in conserving biodiversity of global importance, providing critical habitat for priority transboundary fish stocks

(iv) Supporting studies

(v) The establishment of common regional data requirements and protocols to promote national efforts to establish MPAs/fish refugia

(vi) Mapping existing and potential MPA/fish refugia sites with GIS technology

(vii) Development of a regional action plan that would lead to the strengthening of existing and creation of new priority MPAs/fish refugia

(viii) Training and capacity building

(ix) Awareness and outreach activities

(x) Preparation of a Full Sized Project (FSP) proposal for management of existing and creation of new MPAs

The BOBLME Implementing Partner University of Washington's "status report" on Marine Protected Areas (MPAs)[1] and fish refugia[2] in the BOBLME area which drew upon and updated the existing reviews and inventories, including legislative framework, MPA design and consultative process in their formation, MPA objectives, MPA management and enforcement was used as a major input for the workshop. The report was used to obtain feedback from the participants on the accuracy and coverage on MPAs and fish refugia in the BOBLME countries. MPAs and fish refugia are considered a subset of Marine Managed Areas (MMAs), in which any form of regulatory regime is applied.

[1] Marine Protected Area (MPAs) are defined by IUCN as "any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment", IUCN, CORIDO and ICRAN 2008

[2] Fish refugia are MPAs that have been set up to protect a fishery resource during some part of its life history, usually during spawning or during the juvenile stage. IUCN, World Commission on Protected Areas (IUCN-WCPA) 2008.

2.0 OPENING OF THE WORKSHOP

Opening remarks by Dr. Rudolf Hermes, Chief Technical Advisor, BOBLME

Dr. Rudolf Hermes welcomed the participants on behalf of the BOBLME project. He mentioned that the workshop is part of an ongoing processes that will lead to better managed MPAs in an overall effort to improve the livelihoods of over 400 million people dependent on the large marine ecosystems of the Bay of Bengal. He mentioned that this is the second project activity in Malaysia and is pleased to be in Penang for the workshop. He is expecting the workshop to review and validate the eight country profiles to be presented at the workshop and obtain feedback for further updating of the report and looks forward to an active and enjoyable workshop.

Opening remarks by Dr. Neil Andrew, Discipline Director of Natural Resources Management, The WorldFish Center.

Dr. Neil Andrew welcomed participants to Penang and WorldFish Center and mentioned the WorldFish Center's role in participating and supporting activities that work to increase food security and reduce poverty among stakeholders dependent on marine environments. He highlighted the role of MPA's at the frontier of conflicts in marine environments and its use in balancing ecosystem services.

Opening remarks by Mr. Ismail Ishak, Fisheries Research Institute, Department of Fisheries Penang, National Coordinator BOBLME and Puan Shahima Abdul. Hamid, Director, Department of Marine Parks, Malaysia, Project Steering Committee Member, BOBLME.

Mr. Ismail Ishak delivered the welcome remarks on behalf of Department of Fisheries and Department of Marine Parks, Malaysia and extended his welcome to the participants to Penang Island. He focused on the expertise and experience of the participants which he believed will add flavour to the discussions of the workshop and help to develop the roadmaps for the formulation and adoption of the Strategic Action Plan (SAP).

He informed the workshop that there are around 200 MPA's in Malaysia which have been gazetted. About half of these are mangrove reserves. Also the coastal areas of two nautical miles around islands have been declared as marine parks. This is to provide protection and conservation for marine resources. Many of these islands are areas frequented by turtles and areas with coral reefs. The idea is to promote natural regeneration of the marine resources and also to regulate recreation and other activities.

3.0 WORKSHOP OBJECTIVES AND MODUS OPERANDI

3.1 Objectives

The workshop facilitator Dr. K. Kuperan Viswanathan presented the workshop objectives and process to the participants. The workshop is expected to contribute to the BOBLME Sub-Component 3.2 by providing a venue for discussion of the status review report findings, identifying gaps in MPA networks, and areas where design, policy making, data collection and management can be strengthened and harmonized. The workshop is also expected to enable the drafting of recommendations for capacity development and other potential interventions.

3.2 Workshop outputs

The key outputs expected from the workshop are as follows:

- The establishment of a BOBLME Marine Managed Areas Working Group of regional experts
- A review and updating of MPA/fish refugia classification criteria
- Creation of an inventory and updating of status of existing MMAs in the BOBLME
- A gap analysis to assess effectiveness of existing systems of MMAs
- Input into the final MMA status review report
- Recommendations for capacity development and other potential project interventions

3.3 Mechanism of the workshop

The country delegates at the workshop were briefed before the workshop to familiarize themselves with the background and overall thrust of the Bay of Bengal Large Marine Ecosystem Project (www.boblme.org). This is a project under the GEF International Waters portfolio, implemented to address transboundary priority issues and to formulate a Transboundary Diagnostic Analysis (TDA) and a Strategic Action Plan (SAP).

Country delegates are expected to provide updated information on their respective country's approach to Protected Area Management and governance across sectoral institutions (fisheries, environment, parks, etc.) and multiple layers of jurisdiction (local, provincial, national, international).

The two day workshop was based on technical presentations on the first day with the introduction to the BOBLME project and followed by the presentation of the study on the general status of MPAs in the BOBLME project countries. This was followed up with a detailed presentation of the eight country profiles of MPA status. The status of the MPA databases and mapping was presented next. A presentation of the social dimensions of MPAs provided a more human context to MPA development and management. The concept of fish refugia and experiences from UNEP/South China Sea (SCS) Project and USAID FISH Project provided some real examples of the use of the concept in another large project in the Philippines. The understanding of the MPAs was further elaborated with the MPA network system in the Coral Triangle Initiative (CTI) project in Indonesia. The technical presentations were concluded with a presentation on the use of MPAs in the context of fisheries with the elaboration on the FAO technical guidelines on MPAs and Fisheries. At the end of the first day the participants were given hard copies of the MPA country profiles to review over night.

On the second day, the workshop used the process of working groups to elaborate responses to a set of key questions:

1. What are the critical support needs and analysis for MPA system development - nationally and regionally (transboundary)?
2. How effective are existing system of MPAs in: (a) conserving biodiversity of global importance, and (b) providing critical habitat for priority transboundary fish stocks - supporting and hindering factors/attributes?
3. What regional level activities will your country benefit from (e.g. information exchange, knowledge management, databases, workshops, studies)?

The Workshop Agenda is as shown in Appendix 1.

The workshop was attended by 43 participants. A total of 37 participants was from the eight BOBLME project countries, two consultants from the University of Washington, USA, two FAO consultants and one facilitator/resource person from Malaysia. The participant list is as in Appendix 2.

4.0 PRESENTATIONS

4.1 DAY 1

After the opening sessions, Day 1 of the workshop was spent on presentations on the BOBLME project and the status of MPAs and the eight country profiles. In addition, status of the databases and mapping situation was also introduced. The social dimension of MPAs was also presented and the concepts on fish refugia applied in the UNEP/South China Sea and the USAID FISH project were also highlighted. The MPA network system used in the CTI Indonesia was also introduced. The final presentation for the day focused on the technical guidelines on MPAs and fisheries developed by FAO.

4.1.1. BOBLME Project Overview (Dr. Rudolf Hermes)

Rapid population growth in Bangladesh, India, Indonesia, Malaysia, Thailand, Myanmar, Sri Lanka, and the Maldives and high dependence on aquatic resources by these countries for food, trade, livelihoods, and increased land use are having major impacts on their marine ecosystem. The Bay of Bengal over which these eight countries are spread is experiencing over exploitation of fish stocks, habit degradation and land based pollution from terrestrial activities. There is increasing uncertainty whether the ecosystem will be able to support livelihoods in the future. The BOB is one of the large marine ecosystems of the 64 such systems in the world. It is also one of the larger of the large marine ecosystems and is the third largest after the polar/arctic marine ecosystems. The BOBLME project which covers an area of 6.2 million kilometers^2, eight countries and 450 million effected people is a large project that hopes to improve the ecosystem through five components of the project.

The components are:

i) Development of an Action Plan

ii) Resources Management

iii) Understanding the Environment

iv) Ecosystem Health and

v) Communications, Monitoring and Evaluation.

The project has a total of 16 sub-components from these five components. Sustainable development of these ecosystems is seen from five modular assessments (refer to Figure 1 below) which are

i) Pollution and Ecosystem Health

ii) Fish and fisheries

iii) Socioeconomics

iv) Productivity and

v) Governance.

The subcomponents of the project are as follows:

Component 1

Strategic Action Plan

- Finalize Transboundary Diagnostic Analysis (TDA)
- Establish BOB management arrangements
- Devise a sustainable financing mechanism
- Formulation and adoption of Strategic Action Plan (SAP)

Component 2

Coastal / Marine Natural Resources Management and Sustainable Use

- Promote community-based management
- Improve policy harmonization
- Devise regional fishery assessments and management plans (3)
- Collaborative critical habitat management

Component 3

Improved Understanding and Predictability of the BOBLME Environment

- Improved understanding of large-scale processes and dynamics affecting the BOBLME
- Promote use of MPAs to conserve regional fish stocks
- Improved regional cooperation with regional and global assessment and monitoring programmes

Component 4

Maintenance of Ecosystem Health and Management of Pollution

- Establishment of an effective ecosystem indicator framework
- Develop a regional approach to identifying and managing important coastal pollution issues

Component 5

Project Management

- Establishment of the Regional Coordination Unit (RCU)
- Monitoring and evaluation system
- Project information and dissemination system

"The Status of Marine Managed Areas in the Bay of Bengal" workshop addresses component 3.2 which is "Promote the use of MPAs to conserve regional fish stocks".

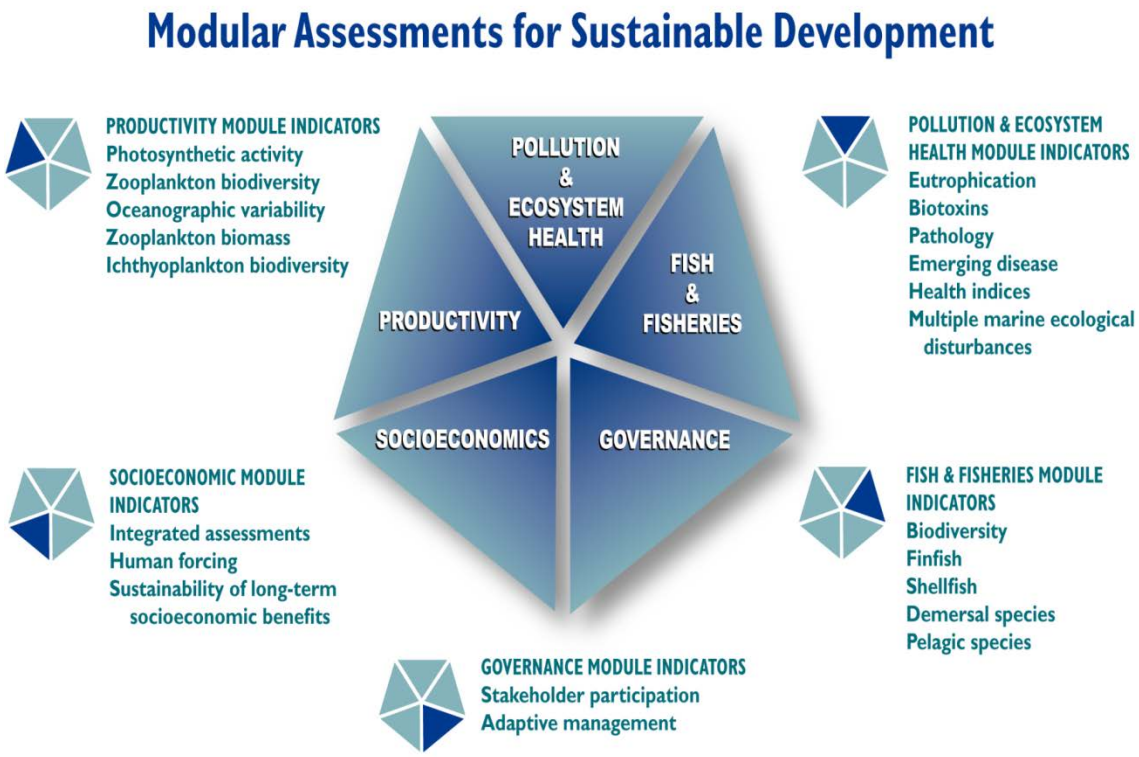

Figure 1: Modular Assessments for Sustainable Development

Expected Outputs of the BOBLME Project

- Establishment of an institutional arrangement which is financially sustainable
- Transboundary Diagnostic Analysis
- Commitment from the BOBLME countries to implement a Strategic Action Programme (SAP)

Expected Outcomes of the BOBLME Project

- Stronger governance:
  - Improvements in policy development
  - Processes for planning and dialogue

- Improved resource management:
  - Better understanding of small-scale fisheries issues
  - Co-management - Multi-sectoral involvement
  - Healthier ecosystems
  - Sustainable fisheries

- Improved well-being, greater resilience of coastal communities

- Better knowledge of:
  - Fisheries for hilsa and Indian mackerel
  - BOBLME's large-scale processes and ecology
  - Likely effects of climate change
  - Basic ecosystem health indicators in the BOBLME

What has been achieved since project inception?

- The preliminary Transboundary Diagnostic Analysis (TDA) has been reviewed; new TDA was drafted and currently under consultation
- Regional Inception Workshop agreed that the Project and its activities were still relevant
- National Inception Workshops have been completed in six countries
- Project Steering Committee (PSC) adopted a Regional Work plan for 2010, second PSC Meeting scheduled for March 2011
- Website is up and running and a Communication Strategy adopted
- BOBLME Project offices relocated in Phuket
- Many partners have been engaged (eg GPA, IOGOOS, IUCN, MFF…)
- Training provided in CCRF, EAF, livelihoods, stock assessment, communications
- Regional Workshops on Fisheries Statistics and Management
- Regional Workshop on Land-based Pollution; country studies
- Formation of Oceanography / Climate Change and Ecosystem Health Indicator Working Groups (BOBLME is IOGOOS Member)
- Lessons learned / best practices reviews and workshops for Integrated Coastal Management (ICM) in South and Southeast Asia
- Fisheries and Environment Policy Analysis in progress
- Critical habitats workshops (Mergui) in Thailand and Myanmar; socio-economic assessment and workshops (Gulf of Mannar)
- Regional review on MPA status in progress

- Country assessments on endangered species (marine turtles) underway
- Promotion of Andaman Sea Marine Ecoregion Process

The project works with the regional organizations, institutions and associations and international agencies and universities to realize its objectives and outcomes. The current agencies that it has collaborated with include the following CORIN, UNEP, UNDP, FAO, IUCN, ICRI, GPA, IOC, IOGOOS, MFF, IOSEA, SEAFDEC, The Worldfish Center, BOBP-IGO, SASP-SACEP, EASP-COBSEA, NACA, ICSF, IOTC, AECEN, IW Learn, IAEA, GESAMP, PEMSEA, BIMSTEC, Universities, ASEAN, and SAARC.

4.1.2 General Status of MPAs and Study Methods (Dr. Patrick Christie and Ms. L.Katrina ole-Moi Yoi)

This presentation by Dr. Patrick Christie formed an important base for the workshop. This commissioned study on the status of MPAs in the Bay of Bengal region is to provide updated information on MPAs and on the quality of information which can be used for decision making regarding the role of MPAs in the Conservation of Regional Fish Stocks. The dynamics of the social and biological relationships in the marine environment is complex as shown in Figure 2 below:

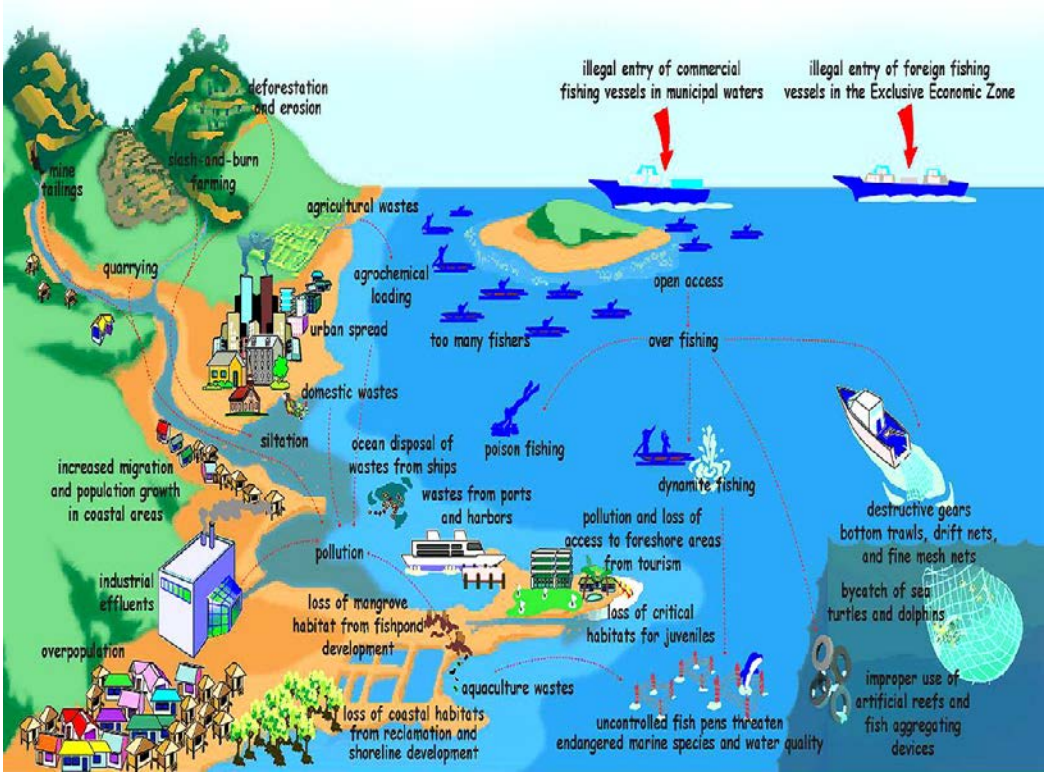

Figure 2: Complex issues surrounding marine resource use

The fisheries of the Bay of Bengal have undergone disturbing changes. The marine fish yields have increased four folds over the last 30 years. In 2003 the marine fish yields stood at 4 million tonnes (Sampath 2003). However, the disturbing factor is the decline in catch per unit effort, the average size and weight of key species have declined significantly (NOAA and SAUP 2007). The BOBLME project recognizes the need to rebuild stocks and the role of MPAs in doing this is the crucial interest.

The MPA study was therefore commissioned to look at the following under component 3.2 of the project that is:

- To develop a better understanding of and promote a more comprehensive approach to the establishment and management of marine protected areas (MPAs) and fish refugia for sustainable fish management and biodiversity conservation objectives
- Provide an objective, baseline assessment

The study achieved the above objectives by first looking at the context in which MPAs are developed and used in the eight counties of the Bay of Bengal. Profiles for each country were developed by looking at the MPA inventory, objectives, legislation, governance, effectiveness and threats. The researchers adopted the IUCN social-ecological framework to assess BOBLME MPA system status and effectiveness. Based on the profiles they made some general recommendation on MPA development and management.

The main approach used for the study is a detailed review of published, industry and government literature and online databases (140 sources cited), GIS maps developed using data from the WDPA MPA database, reports sent to country experts for validation, and validation at this workshop.

Some key limitations of the study were highlighted by the researchers and these include the following:

- Published information about MPAs in the region is limited
- Reports are often out of date and sometimes contradictory
- Difficult to accurately identify and count the number of MPAs in the Bay of Bengal Region
- The degree of protection within MPAs is also difficult to ascertain (e.g., the extent of 'no-take' MPA areas largely unknown)
- MPA terminology varied across countries and within countries from marine park, ecologically critical area, site of special area management, wildlife sanctuary, national park and dive site among many others

The researchers adopted the IUCN definition of MPAs which is:

"Any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment." (Resolution 17.38 of the IUCN General Assembly [1988] reaffirmed in Resolution 19.46 [1994]).

Fish refugia are defined as "areas managed to control fishing gear types and to protect vulnerable life history stages in order to improve fisheries sustainability".

The researchers concluded by stressing the need for field assessments as the next major step in documenting the status of MPAs in the project countries. They also reiterated the current emphasis on biological goals versus social goals for MPAs in most of the countries. The human dimension is required for success of MPAs and thus the ecological/biological and social interactions should be given appropriate attention in the development of MPAs.

The priority recommendations that came out of the study on the general status of MPAs in the BOBLME project countries are as follows:

1. Field assessments of MPAs status are needed to validate the study report and identify priority steps with broad input from various institutions and sectors.
2. A series of MPA pilot sites should be identified in which MPA best practices (as represented by these recommendations and other sources) should be field tested.
3. A BOBLME MPA learning network should be established to facilitate communication among MPA practitioners and help the diffusion of innovative practices.
4. A working group for MPA assessment and implementation should be established within the BOBLME program. This working group will consist of leaders primarily from government, non-government and resource sector organizations. The working group's mandate should be to improve, at the LME scale, the understanding of MPA status, strategic planning, and facilitation of MPA monitoring.
5. The BOBLME program should organize a high profile meeting of government officials to launch MPA system within the BOBLME and to foster political will.

Discussion

A question whether wildlife protection is included in MMA was raised by the Sri Lankan participant. The Bangladesh participant raised the question as to why the term MMA (Marine Managed Areas) is used rather than MPA (Marine Protected Areas).

Dr. Rudolf Hermes responded by saying that marine protected areas are not necessarily restricted to no take zones. Wildlife protection areas, if they have a coastal or marine component, would be included. If a country uses the term MPA only for a specific type of area; e.g. under its environment protection laws, then perhaps the term MMA should be preferred as a more general descriptor.

4.1.3 Eight Country Profiles (Ms. Katrina Ole-Moi Yoi)

The presentation was based on a detailed review of published, industry and government literature and online databases and GIS maps developed by The WorldFish Center. The list of MPAs presented in this report was first developed using the UNEP-WCMC World Database on Protected Areas, and then modified and expanded based upon the results of the literature review.

The profiles for each of the eight countries covered the following areas:

1. Basic information on MPAs in the country, focused on the purpose of MPAs and the coverage of MPAs in the country
2. Governance arrangements looked at the legal and institutional collaboration mechanisms and the legal mandate for the MPAs.

3. Information considerations examined the ease of information availability and use of the information
4. Collaborative management and planning, looked at the extent to which there is stakeholder participation and collaboration in planning for the MPAs
5. MPA field implementation looked the aspects of management, enforcement, and funding aspects of MPAs.

Maldives

MPA status

- 25 Dive Sites
- 2 Mangrove Protected Areas
- 3 Island Protected Areas

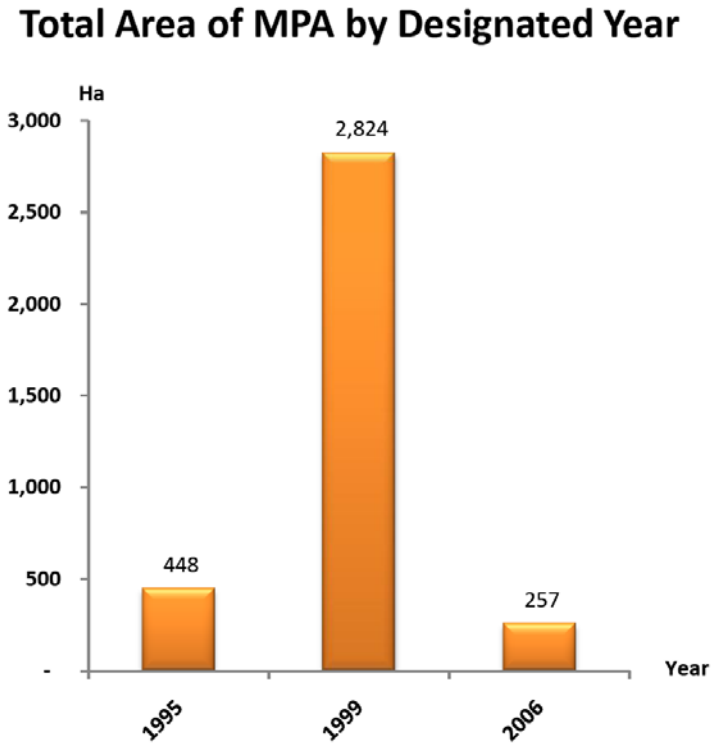

Figure 3: Area of MPAs in Maldives by year

Current Initiatives

1. "Atoll Ecosystem Conservation Project" in Baa Atoll (GoM, UNEP, GEF)
2. GoM working to protect 5% of its coral reefs by 2012, specifically:
    - Developing management plans for existing MPAs
    - Increasing the size of existing Protected Areas
    - Creating buffer zones around Protected Areas
    - Declaring additional Protected Areas

Sri Lanka

MPA status

- 15 Sanctuaries (1 Special Area Management Site)
- National Parks (1 Special Area Management Site, 1 Ramsar Site)
- 2 'Fishery Managed Areas'

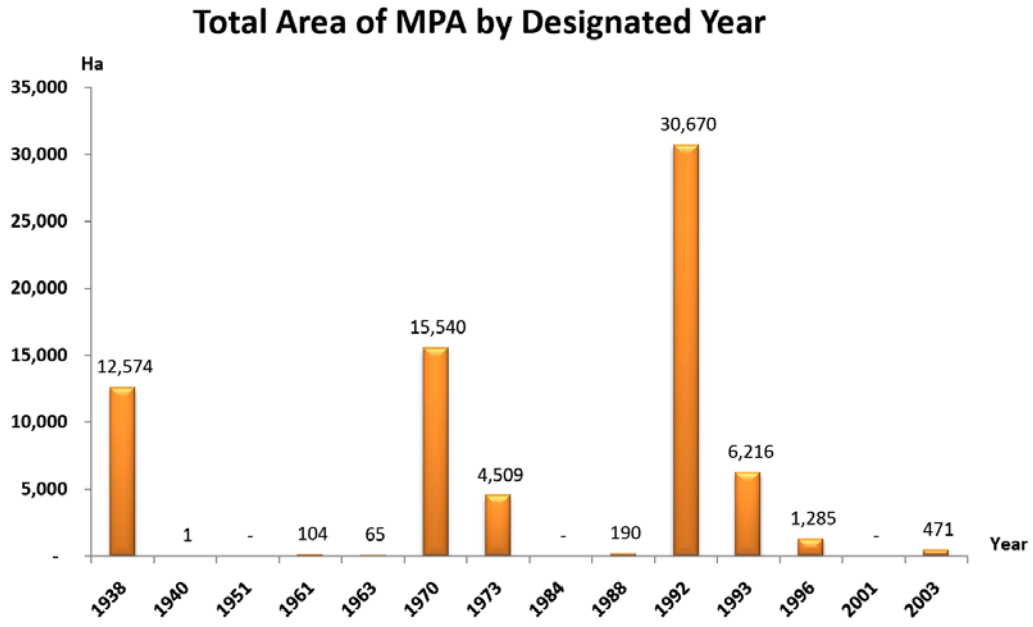

Figure 4: Area of MPAs in Sri Lanka by year

India

MPA Status

- 9 Sanctuaries (1 Ramsar Site)
- 5 National Parks
- 1 Tiger Reserve
- 3 UNESCO Biosphere Reserves

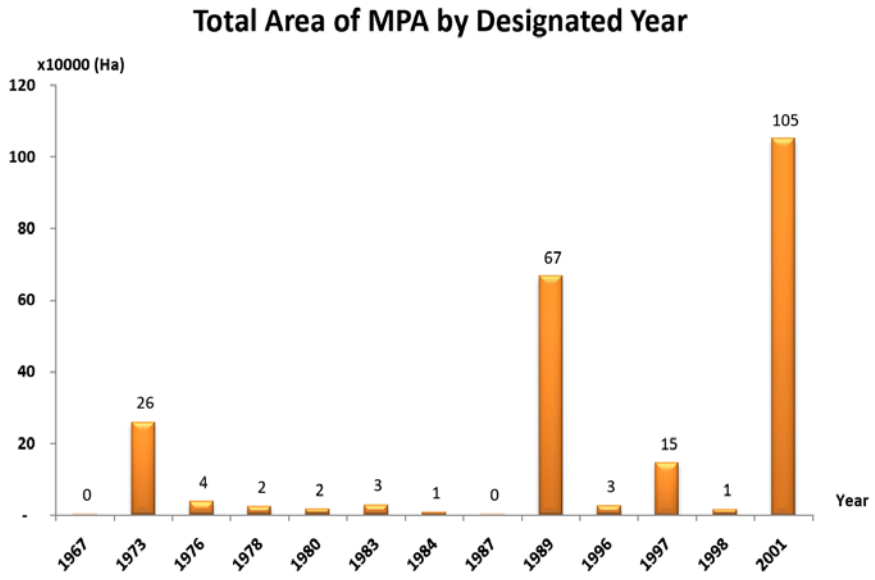

Figure 5: Area of MPAs in India by year

Current Initiatives

- Government of India planning to extend protected area network:
- Increase MPA coverage in island areas from 18.5% to 35.1%
- Increase MPA coverage in coastal zone from 6.1% to 7.1%
- Government of India conducting coral surveys throughout country
- Ministry of Environment and Fisheries evaluating management effectiveness in marine/terrestrial PAs
- Gulf of Mannar Marine National Park: Efforts underway to collect socioeconomic data/introduce alternative livelihood programs/improve participatory processes
- Government of Orissa recently submitted proposal to declare community reserve
- National Wildlife Action Plan (2002-2016) states participatory management committees should be established in each PA in India

Bangladesh

MPA status

- 3 National Parks
- 1 Game Reserve
- 4 Wildlife Sanctuaries (1 World Heritage and 1 Ramsar Site)
- 4 Hilsa "Closed Seasons"
- 4 Ecologically Critical Areas

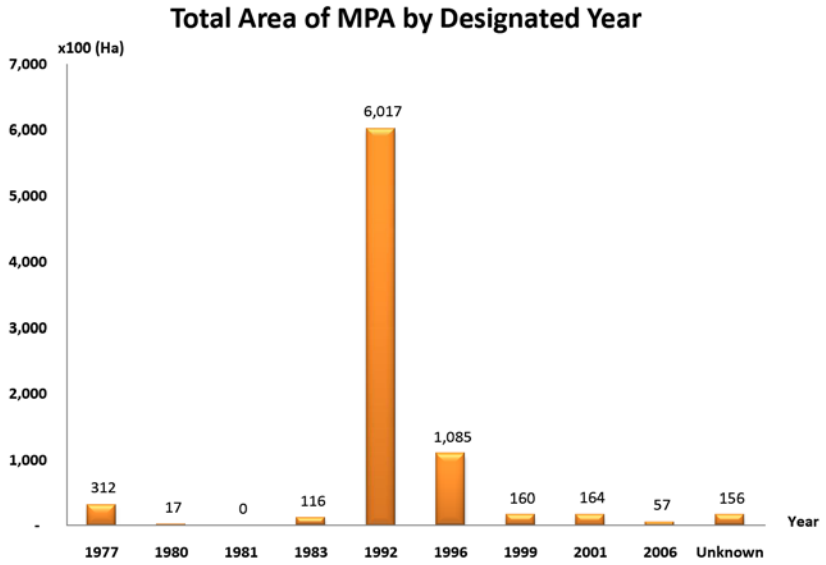

Figure 6: Area of MPAs in Bangladesh by year

Current Initiatives

- Coastal and Wetland Biodiversity Management Project in Cox's Bazar and Hakaluki Haor (DoE, MoEF, UNDP)
- Monitoring/awareness raising activities for nesting Olive Ridley and Green sea turtle populations around St. Martin's Island (MoEF)
- Ongoing World Bank/Government of Netherlands project to streamline work of govt agencies in coastal zone

Myanmar

MPA status

- 3 Wildlife Sanctuaries
- 2 Proposed Wildlife Sanctuaries
- 1 Marine National Park (ASEAN Heritage Park)
- 1 Reserved Forest

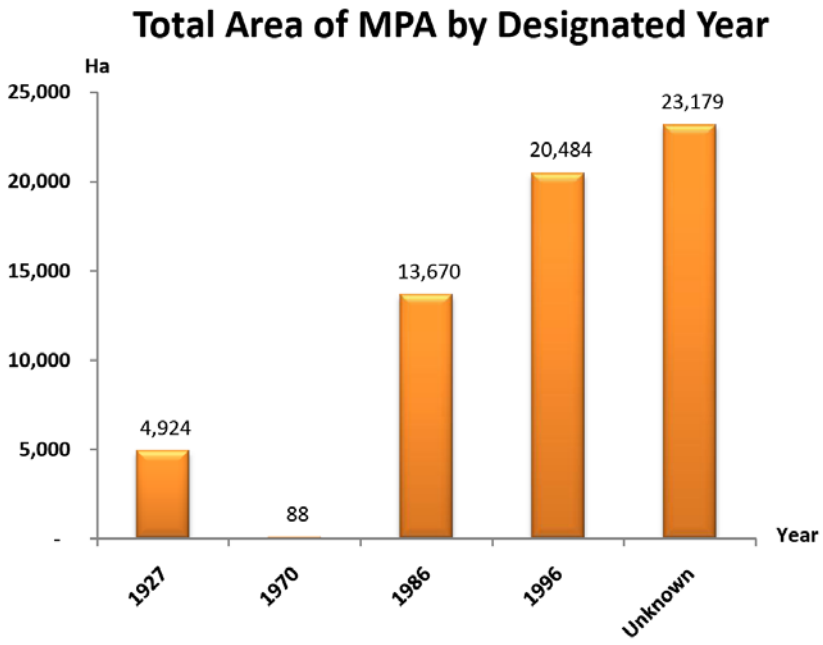

Figure 7: Area of MPAs in Myanmar by year

Current Initiatives

- Efforts underway to expand boundaries of two 'MPAs' to include surrounding marine habitat (currently only beach)
- Plans to designate two wildlife sanctuaries in Irrawaddy Delta

Thailand

MPA Status

- 10 Marine National Parks
- 1 Non-Hunting Area
- 1 UNESCO Biosphere Reserve
- 7 Unknown Protected Areas

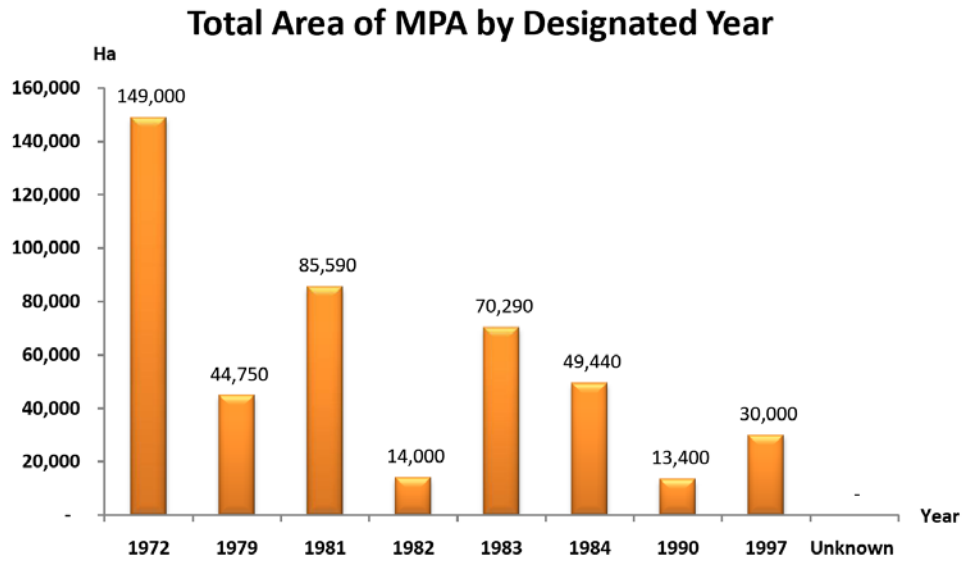

Figure 8: Area of MPAs in Thailand by year

Current Initiatives

- Govt implementing 98 coral-related projects across country
- SAMPAN Project just getting underway

Malaysia

MPA Status

- 4 Marine Parks

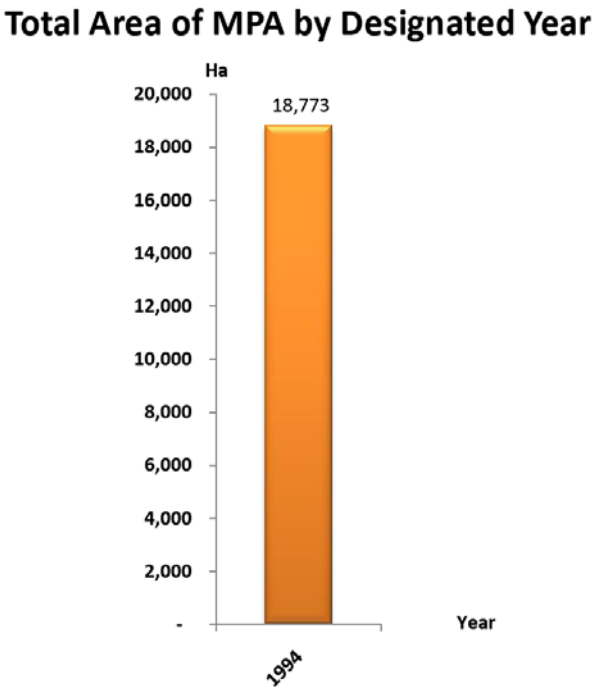

Figure 9: Area of MPAs in Malaysia by year

Current Initiatives

- Recent studies on carrying capacity of Pulau Payar
- Studies on effectiveness of Trust Fund

  (Both could serve as models elsewhere in BOBLME)

Indonesia

MPA Status

- 1 Game Reserve
- 5 Unknown Protected Areas
- 2 Marine Nature Parks
- 2 Nature Reserves
- 1 Sanctuary
- 2 Recreation Parks
- 1 Marine Protected Area

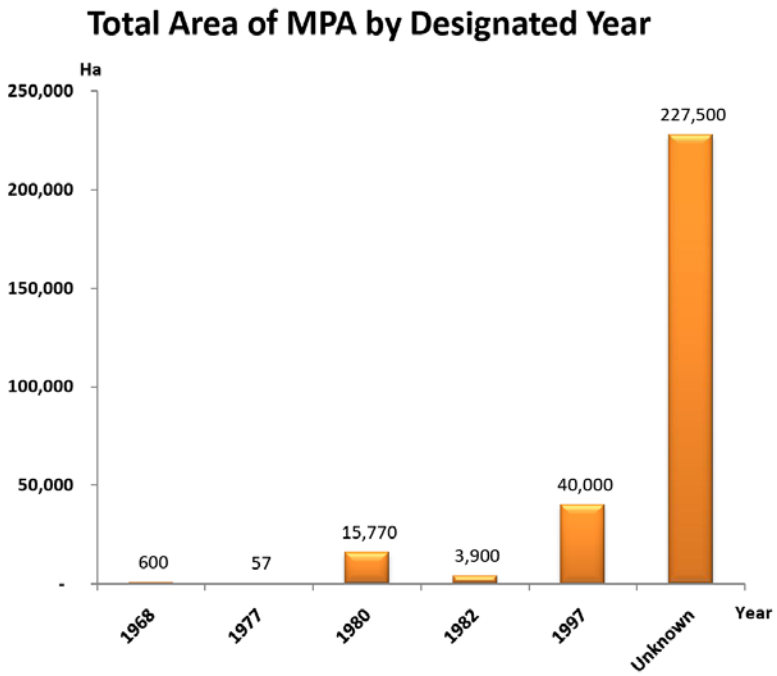

Figure 10: Area of MPAs in Indonesia by year

Current Initiatives

- Ongoing reef monitoring efforts in Padang, (led to formation of Pulau Pieh MPA in 1990s).
- Efforts underway to set up a School for MPA Management to help MMAF build the skills of 11 000 mid-level officers

4.1.4 Status of MPA Databases and Mapping (Ms. Tan Moi Khim)

This presentation touched on the data sources and projects that were used to produce the maps of MPA areas in the BOBLME project. The total area of MPAs in the eight countries of

the BOBLME project is estimated at 3 984 773 ha. The distribution of the areas of MPAs among the countries is as shown in Figure 11. The data sources came mainly from Wood, L.J. (2007) MPA global database of MPAs and the World Database on Protected Areas (WDPA) annual release 2009. The WDPA is a joint product of UNEP, IUCN and other NGO working in collaboration with Governments. It was stated that some 2 686 839 ha of MPAs could not be listed under the IUCN categories.

Further collaborative activities needed are as follows:

- Develop the interactive online BOBLME MPA map
- Overlay the MPA data with fisheries information
- Update the repository of MPA data and MPA spatial information in BOBLME

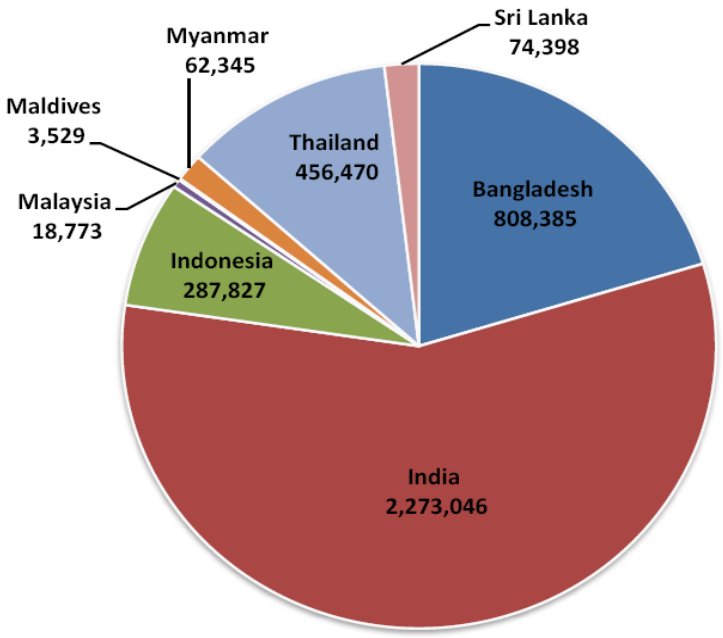

Figure 11: Total Area of MPAs by Country

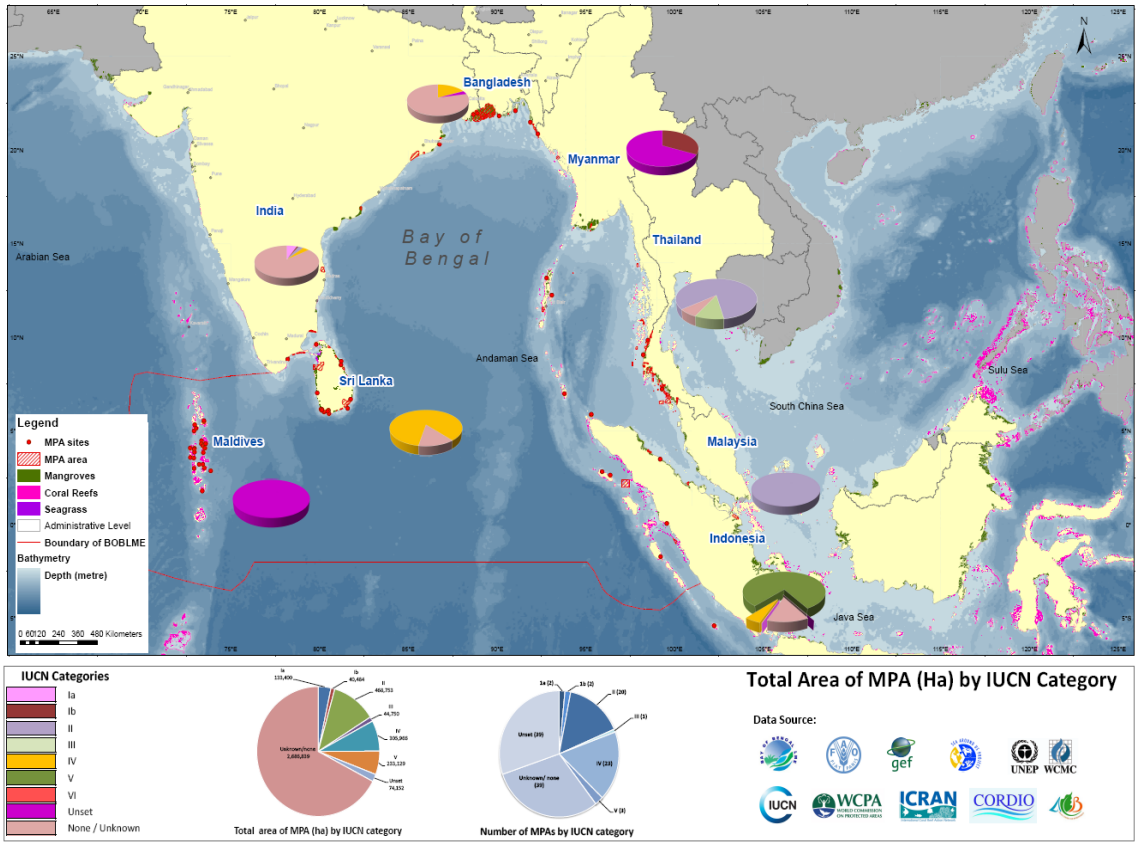

Figure 12: Total Area and Location of MPAs by IUCN Category

Discussion

Dr. Patrick raised the issue on whether the ICUN categories are really useful. He observed that after working in the Philippines he has had numerous discussions on IUCN categorization and stated that there is a lot of confusion on the IUCN categorization. Also the six categories are not mutually exclusive.

Dr. Rudolf Hermes clarified that the IUCN category number six refers to any protected area not included in the other categories and we could agree on that.

Dr. Bhatt from India raised the issue that MPAs categorization is not an isolated case. We are far behind and need to create a knowledge path on how things are evolving. He raised the point that coastal marine issues are complex and a diverse community of cultures is involved and there is an evolving literature on this. He also highlighted the issue of measuring the effectiveness of enforcement of regulations and there is a real difficulty with it. There is a need to add more information to the status review that has been developed by Dr. Patrick and Katrina and there are large numbers of PhD thesis which have looked at some of these issues that are not included in the review.

The overall recommendations put forward by Dr. Patrick and Katrina from the MPA and fish refugia status review in the Bay of Bengal large Marine Ecosystem is as follow:

- Field assessments of MPAs status are needed to validate this report and identify priority steps with broad inputs from various institutions and sectors.

- A series of MPA pilot sites should be identified in which MPA best practices (as represented by these recommendations and other sources) should be field tested.

- A BOBLME MPA learning network should be established to facilitate communication among MPA practitioners and help the diffusion of innovative practices.

- A working group for MPA assessment and implementation should be established within the BOBLME program. This working group will consist of leaders primarily from government, non-government and resource sector organizations. The working group's mandate should be to improve, at the LME scale, the understanding of MPA status, strategic planning, and facilitation of MPA monitoring.

- The BOBLME program should organize a high profile meeting of government officials to launch MPA system within the BOBLME and to foster political will.

Some suggestions on broad scale consideration and planning practices were made and these are as follows:

- The BOBLME program should develop and adopt a context-appropriate and incremental science strategy that considers scientific capacity, need and priorities. The use of sophisticated decision support tools for MPA planning, such as computer based MARXAN, are not likely to be context appropriate given the size and diversity within the BOBLME.
- The BOBLME should invest initially in in-country status and needs assessments. These assessments should draw from distinct information sources, and should include a significant field component.
- The BOBLME program should host a side meeting/workshop of scientists and MPA experts at one of the international marine sciences conferences in 2011 or 2012. This workshop should produce a realistic and comparable framework for MPA monitoring.
- In parallel with the CTI, the BOBLME program should create an internet repository of MPA-relevant data and produce a map-based atlas of marine resource and coastal areas. This internet-based database should, at a minimum, include basic and relevant data on human communities, resource use patterns, habitat extent and condition, and resource management/MPA management effectiveness.
- The BOBLME should host a workshop of policy makers and resource user organization leaders to initiate a process to collect and engage relevant local knowledge in MPA policy making.
- The BOBLME program should conduct a Strength/Weaknesses/Opportunities/Threats (SWOT) assessment of co-management

opportunities in the BOBLME region. Special attention should be paid to the legal and socio-cultural conditions which foster or inhibit co-management.

The session continued with discussions on the recommendations from the status report on Marine Protected Areas and Fish Refugia.

Issues of outdated information were raised and it was decided that the questionnaires should be send to the BOBLME country focal points to get latest information. For example the information on MPAs in the case of Bangladesh for 2007 to 2009 is out of date. The issue of validating the information is also difficult as the information is collected from many different sources and it is not possible to validate the information that easily. It was suggested that the questionnaires be sent to project implementers to get more accurate information.

Dr. Patrick concluded by responding that the initial survey of government officials and field assessments may result in some specifics being not accurate but in general the assessment provides an accurate picture of MPAs in the BOBLME region.

Dr. Rudolf Hermes suggested that some further analysis be done to reduce the gaps in information. Dr. Bhatt from India suggested that country consultants be used to update the assessments. He also highlighted the new integrated coastal zone notification legislation which came into effect two weeks ago which requires fishermen and their concerns to be taken into account in the setting up of MPAs.

4.1.5 Social Dimensions of MPAs (Ms. Ramya Rajagopalan)

The issue that MPAs are often seen from biological perspective, but not as social spaces, socially conceived and perceived by fishing communities was taken up by Ramya Rajagopalan. Few studies look at the social profile of communities, and social implications of MPAs especially on communities and other stakeholders. Not much information on the cost-and-benefits from MPAs are available. She claimed that about ten per cent of active fisher populations of India are affected by unfair restrictions on fishing operations in/near MPAs quoting examples from Gulf of Mannar National Park and Biosphere Reserve and Gahirmatha (marine) Wildlife Sanctuary. She emphasized the need to review the effectiveness of regulations and its impacts on communities. There are serious gaps in addressing social issues when it comes to MPA development. Among her recommendations include, a clear policy framework that makes community participation a must, recognizing conservation efforts that do not address socioeconomic issues are unlikely to succeed. Legal frameworks for MPAs should provide for community participation at all stages of MPA design and implementation, and for the use of local and traditional knowledge. Also better implementation and enforcement of existing area-based fisheries management measures that exist in most countries (particularly artisanal trawl-free zones) is required.

Discussion

The discussion that followed focused on the division between man and biosphere. The lack of attention to the human dimension was taken up. The general inadequacy of economic valuation, lack of a fuller understanding of the social dimension and the inadequacy in fitting into the ecological and biological perspectives was emphasized by Dr. Bhatt from India. The participants from Bangladesh emphasized the importance of social information and the need to consider alternative livelihoods. The Sri Lankan participant also indicated the need for better cooperation between the different agencies involved in developing MPAs. There is also a need for greater cooperation between countries such as India and Sri Lanka in the Gulf of Mannar. In the case of Sundarbans there is no joint plan between India and Bangladesh. The densities of human population in these parts of the world are large and thus it is not simple to tackle the social economic dimension. To the question of what limits the collection of information on people and communities Ms. Ramya stated that institutions do take into consideration community and many people are not trained or are not aware of the tools for collecting information on people. They lack the methodology. The example from Bangladesh was brought to attention where the protection provided to the Hilsha fish by providing protection during the breeding phase of one month produced three times more Hilsha. Now the fishers are asking for two months support.

4.1.6 Fish refugia Concept and Experiences from UNEP/South China Sea (SCS) Project and the USAID FISH Project (Prof. Nygiel Armada)

Fisheries refugia are sites of importance to critical stages of the life-cycle of fish species and are defined as follows:

"*Spatially and geographically defined, marine or coastal areas in which specific management measures are applied to sustain important species [fisheries resources] during critical phases of their life-cycle, for their sustainable use*."

The experience of how this concept was developed and used in the two large projects in the Philippines and the South China Sea region was shared by Prof. Nygiel Armada with the workshop participants. The development of the fish refugia concept involves the following:

- Specific areas of significance to the life-cycle of fish species are identified
- Should be defined in space and time
- Should NOT be no-take zones
- Serve to safeguard spawning aggregations, nursery grounds, and migration routes.

Pro. Nygiel Armada also outlined the key elements of the success of an MPA based on the experience of the USAID FISH project in the Philippines. These are:

- Participatory approach all the way (from planning to implementation)
- Legal instrument (ordinance, management plan)
- Information, education and communication (IEC)

- Establishment of enforcement team
- Adhering to a form of MPA rating system
- Measuring, communicating and validating the gains
- Establishment of local MPA monitoring team
- Advocating and setting in place annual investment plan

He also noted that fish refugia/fish sanctuary/MPA also facilitate the following:

- Serve as the entry point for community participation in fisheries management
- Serve as laboratory for community's learning and appreciation of the principles of fisheries management
- Serve as common ground for co-management between community, NGOs, and government

In addition to the above key elements the other elements of success of MPA's are as follows:

- Species specific management (e.g. of rabbit fish, *Siganus canaliculatus* in the Philippines), Closed season during spawning season of rabbit fish during the 3rd, 4th, and 5th day after the new moon.
- Zoning of fisheries uses
- Information, education and communication
- Measuring the gains

The key governance challenges that were raised were:

- Effective co-management arrangements between national government, provincial government, municipal government, barangay (village) level government and the various collaborators
- Equity issues, ensuring gains from MPAs are spread to all
- Instituting effective joint enforcement.

Discussion

The issue of highly migratory fish species and that they are not included in fish refugia was raised. This will require more cooperation between countries and so regional projects such as the BOBLME can advance the issue of looking at highly migratory species and shared stocks. The issue of what is the difference between fish refugia and an MPA was raised. The difference can be seen in terms of the level of restriction placed on the harvesting in those designated areas. In some MPA's it is declared as no-take zone which means no fishing is allowed in that designated area. In some cases a buffer zone is created so that a specific

area to protect the fish is designated and followed by the community. In the case of fish refugia, some period of closed season for fishing is declared and adhered by the community, e.g. during spawning time. It was brought to the attention of the workshop that in the Philippines there are requests for more no-fishing areas. How an idea such as fish refugia and MPAs has been taken up by the local government and effectively used for managing renewable resources is quite astounding. In the context of the two presentations by Ms. Ramya and Prof. Nygiel, it was raised by Patrick what will be the role of regional programs in supporting local agencies (authorities) in the management of MPAs. Prof. Nygiel reiterated the "rice cake principle" which is to work at the level of the community as well as at the policy level. It was also noted that at the national level most of the resource managers are at the office level and it will be good to have specific activities at the sites to involve them in the process of. Patrick also emphasized the need for multinational projects such as the BOBLME to invest in the process of community building by providing the venue for people to talk of their experiences and achievements in the various projects from various countries. The success is however mixed in the difference countries. It was raised by the Sri Lankan participants that there is also a need to look at the demand side by limiting the demand for some species that are threatened or being overfished. The focus only on the supply side may not be sufficient to tackle the problem.

4.1.7 MPA Network System in Indonesia and it Application in the Coral Triangle Initiative (CTI) (Dr. Suseno Sukoyono)

The presentation looked at the need for networks for proper MPA development and management. The question of why networking is required emerges from the magnitude of the problem when we look at the biodiversity and the fisheries and the connectivity between the resources and the requirement for governance across regions and countries. The threats to the coastal resources are very real as seen from the extensive coastal zone degradation arising from the intensive harvesting activities at the coastal zone and the increased land based activities. The MPA networks work towards maintaining genetic sustainability and maintaining the connectivity between populations of aquatic resources in different countries and regions. For example, genetic connectivity between the green turtles in Berau, Indonesia, and to those in Malaysia, Papua New Guinea and Micronesia and Northern Australia were illustrated.

Conservation Areas	Number	Area (Ha)
Initiated by MOF	32	4 694 947.55
Marine National Parks	7	4 043 541.30
Marine Nature Recreation Parks	14	491 248.00
Wildlife Reserves	5	5 678.25
Marine Nature Preserves	6	154 480.00
Initiated by Local Governments and MMAF	44	8 834 120.11
Savu Sea Marine National Park	1	3 521 130.01
Marine Nature Reserve	3	445 630.00
Marine Recreation Park	5	278 354.00
District Marine Protected Area	35	4 589 006.10
Total	**76**	**13 529 067.66**

Marine Protected Areas in Indonesia

The key issues on MPAs in Indonesia are:

- Biodiversity conservation
- Species conservation (migratory, endemic, alien species)
- Representation of ecosystem
- Community access to natural resources
- Local autonomy and economic development
- Global climate change
- Sustainable fisheries

The key lesson learned from MPA development and networking are:

1. Establish and strengthen national system (grand strategy) of MPAs integrated into regional and global networks

2. Establish and strengthen trans boundary protected areas and collaboration between neighboring protected areas across national boundaries
3. Improve MPA planning and management that address local and global key threats to marine resources
4. Enhance and ensure involvement of indigenous and local communities and relevant stakeholders in MPA planning and management
5. Provide an enabling policy and institutional environment for MPA
6. Build capacity and strengthen institutions for the planning, establishment and management of MPA
7. Ensure funding sustainability for MPA and district and national system of MPAs
8. Strengthen communication, education and public awareness on MPA
9. Evaluate and improve effective management of national MPA systems
10. Assess and monitor MPA status and trends

The Coral Triangle Initiative (CTI) is a six-country regional cooperation to protect economic and environmental assets in the coral triangle region. The coral triangle also referred to as the Amazon of the Sea has 76% of all know coral species, 37% of all know coral reef fishes, 53% of the world's coral reefs, about 3 000 species of reef fish, the greatest extent of mangrove forest in the world and serves as the spawning and juvenile growth area for the world's largest and most valuable tuna fishery. The CTI network is built around the idea of a knowledge-based, consultative and participative, collaborative, institution building, governance and monitoring and evaluative network. The idea is to establish and strengthen national systems in managing the 13.5 million hectares of MPAs in Indonesia. For example there is now the Bunaken MPA site which is considered the best diving site in the World. Another MPA site, Wakatobi, is considered the best MPA site in Indonesia. There are 45 local schools with 18 000 staff under the Ministry of Marine Affairs and Fisheries to train MPA management staff and develop a sustainable network of MPA personnel.

The final presentation for day one was the presentation by Ms. Lena Westlund on the use of MPAs in the context of regional fisheries.

4.1.8. Use of MPAs in the Context of Fisheries: FAO Technical Guidelines on MPAs and Fisheries (Ms. Lena Westlund)

This presentation laid out the reasons for the development of guidelines on MPAs and FAO's interest in MPAs as an outcome of the FAO expert workshop on MPAs in 2006 and the Code of Conduct for Responsible Fisheries (CCRF) developed by FAO. The guidelines are being developed for policy and decision makers, scientists, managers and practitioners in both fisheries and biodiversity conservation disciplines. The scope of the Technical Guideline is to

provide guidance on implementation of MPAs with multiple objectives, when one of the primary objectives is related to fisheries management. It addresses the interface between fisheries management and biodiversity conservation within the context of a holistic approach.

The technical guideline will consist of two parts: 1) what are MPAs and what do they do? 2) Planning and implementing MPAs. For the purposes of the technical guideline an MPA is defined as any marine geographical area that is afforded greater protection than the surrounding waters for biodiversity conservation or fisheries management purposes. It is emphasized that in most cases MPAs should not be the sole fisheries management tool, but one that complements other, more conventional measures. If MPAs are not combined with other fisheries management tools, it is likely to cause negative effects such as an increase in fishing pressure outside the MPA and higher costs of fishing.

For the planning part MPA networks must be supported by appropriate legal, institutional and policy structures, including cross-sectoral coordination mechanisms and provisions for stakeholder participation. The key message from the presentation is that only meaningful public and stakeholder participation can ensure compliance, long-term sustainable support and equitable results from the use of MPA and such there is a need to create awareness, support good practices and adopt continuous learning.

Discussion

The issue of climate change and how it is to be tackled in the MPAs management was raised by Prof. Nygiel Armada. Are there any in depth effects of climate change on MPAs? Ms. Lena responded by saying that there are not many details on this at the moment but there is some consensus that MPAs may provide better protection against climate change in the case of some countries.

The issue of biodiversity was raised by the Bangladesh delegate and he asked if the guidelines will provide better approaches for defining and measuring biodiversity in the case of fisheries. Lena responded by saying that biodiversity issues are one of the objectives of MPAs and are taken up in the guideline.

Whether a softcopy of the guideline is available at the moment was raised by Dr. Bhatt from India. Lena responded by saying that at the moment only a working copy is available and is not ready for distribution. He also inquired on what other guidelines on the subject are available right now which can be used by BOBLME project partners and other countries.

Day one of the workshop concluded with the participants being provided with hard copies of MPA country profiles and questions for country representatives to review over night. A welcome dinner at a well known sea food restaurant at Gurney Drive, Penang formed the highlight of the evening for the participants.

4.2. DAY 2

4.2.1 Review of Status Reports and Maps

The first part on the morning of the second day of the workshop was focused on the review of the status report and country profiles produced by the University of Washington team and the maps developed by WorldFish Center locating the MPAs in the eight BOBLME countries. Eight break out groups representing each of the countries worked to update the status reports and maps. Corrections were made to the reports and maps based on the contribution of the country participants. A plenary feedback was held after the group discussions.

Plenary feedback by country break out groups

Myanmar

Some changes made to the profiles. Some parks are considered protected areas and this should be included in the profiles.

Malaysia

Pulau Payar Marine Park should be moved up in the map to indicate the correct positioning. By and large the profiles are accurate. Some corrections needed in the status report page 7, local ownership of marine resources is prohibited. Malaysia is very centralized in the application of its laws. States can maintain tenure. Enforcement issues need updating.

Maldives

Some corrections were made in the map. The text of the report has been corrected. There is a need to update the history on MPAs in Maldives. Early in 1990's the concept of protected areas came to be used for dive sites. Now it is being used for large area protection. There are over 100 resort islands and the idea of one island, one resort is being developed. The reefs of the island will be protected once it is selected as an MPA site. A question on how the government is responding to the selection of islands and the level of peoples' control. The hotel owners are responsible for the reefs and an Environmental Impact Assessment is carried out for each hotel development.

Bangladesh

There are nineteen designated protected areas. Some corrections were made to the maps. The Hilsha shad sanctuary has led to the increase in Hilsha production. Legal jurisdiction for the protected areas is still a problem. The report is partially accurate and additional information has been added to update the MPA status report. The priority should be to initiate collaboration between agencies.

India

The MPA status report is a very good attempt to profile MPAs in India. There are, however, a number of new developments such as the New Integrated Coastal Zone notification when declaring areas as no-take zones. This has increased the felt needs in terms of people's participation and is a transition from the earlier coastal regulation. In addition, in December 2010 new wetland rules were also taken into account. Wetlands throughout the world have graduated into ecological zones as opposed to bad swamps. This has resulted in legal protection for wetlands. There is a need to reflect the Sundarbans better in the report and also Andaman and Nicobar Islands require more information. Need to use the information in the websites of NIOT and IOM, Wildlife Institute of India, to update the status report.

Indonesia

The profile of MPA is quite comprehensive. The map needs to reflect Sumatra as part of Indonesia as an area of the project and not all of Sumatra. The boundary on the Indonesia side needs to be reflected clearly as only four provinces on Sumatra are relevant to the BOBLME project. The data provided in the MPA survey are not as found in Indonesia's official list. For example, Pulau Burung MPA is not found in the Indonesian official list of MPAs. This could be due to the transfer of the authorities for managing MPAs from Forestry to Marine Affairs and Fisheries. There are 40 local MPAs but no established institutional arrangement to manage the MPAs. The authority under local government to manage MPAs is not in place. The Indonesia team will contribute through email to improve the MPA status report. The recommendation of the report should include strengthening collaboration with BOBLME. BOBLME should include local government participation in establishing and managing MPAs.

The output of this session and updated maps based on the feedback from country delegates, are presented in Appendix 4.

4.2.2 Break out Group Outputs

The second half of the morning of day two was used to formulate ideas and consensus on the following topics:

Group 1

Critical information support needs and analysis for MPA system development-nationally and regionally (transboundary)

Group 2

Effectiveness of existing system of MPAs in: (a) conserving biodiversity of global importance, and (b) providing critical habitat for priority transboundary fish stocks – supporting and hindering factors / attributes

Group 3:

What regional level activities will your country benefit from (e.g. information exchange, knowledge management, databases, workshops, studies)?

Three working groups were formed with representatives from all the BOBLME project countries. The groups worked after tea and until lunch and continued their deliberations. Facilitation was provided by Dr. Patrick, Prof. Nygiel and Dr. Kuperan. The group outputs were presented in the afternoon at a plenary.

Group 1 – Critical Information needs

Critical information

i) List down critical information you think are needed for the establishment and maintenance of MPAs in the BOBLME

ii) Prioritize

iii) What has been collected

		Bangladesh	India	Indonesia	Malaysia	Maldives	Myanmar	Sri Lanka	Thailand
1	Coordinates	x	x	x	x	x	x	x	x
2	Habitat (coral cover, mangrove, seagrass)	Only mangrove	x	x	x	x	x	x	x
3	Species (flora and fauna)	x	x	x	x	x	x	x	x
4	User groups (community opinion)		x	x	x	x	x	x	x
5	Legal instrument	x	x	x	x	x	x	x	x
6	Potential threats (eg: pollution,)	partial			x				x
7	Carrying capacity								x
8	Source of funding				x				
9	Cost benefit			partial	partial	partial			
10	Migratory fish, birds, turtles			turtles		x	x	x	x
11	Water quality and circulation pattern				x				x
12	Human resource			x	x				

iv) How information will be collected:

The group member suggested to

- Have a centralized MPA database at BOBLME
- Create a linkages with other projects or initiatives
- Establish a regional science working group at BOBLME
- Promote information sharing during regional workshop
- Engage the national consultancy

Group 2 – Effectiveness of existing MPAs

General Themes/Recommendations

- Generally, three levels of involvement needed for MPAs effectiveness:
  - ❖ Scientific community,
  - ❖ National Government,
  - ❖ Local Institutions
- Enforcement
  - ❖ Local (community) enforcement can be effective, and perhaps should be more widely practiced
  - ❖ If local people surrounding MPA were truly involved in process and understand the benefits of MPAs, the enforcement will be much easier to implement
  - ❖ Although co-management is good, but the external help of police/army/navy is needed for enforcement.
- Religious institutions (such as mosques, temples, churches) can also play a role by engaging the community leaders, as they are powerful in communities and able to help with management.
- Also possible to engage influential entrepreneurs who can be community leaders
- Hard to balance between tourism and biodiversity conservation
  - ❖ Many instances of high pressure from tourism
  - ❖ Awareness programs should be implemented (by *both* Fisheries Department and Environmental Department) and disseminate to public
  - ❖ Ownership/Tenure: Monitoring and enforcement could be improved by creating local ownership.
  - ❖ Alternative Livelihoods
    - ▪ If the alternative livelihood cannot be provided, it will create the dissatisfaction among the fishermen.
    - ▪ Identifying alternative livelihoods must be context-specific.
    - ▪ It is important to understand from the communities about their alternative livelihood option. For example, In Sri Lanka, 'automatic': If fishermen cannot go to sea, they figure out something else to do (e.g. agriculture)
    - ▪ There is a need for government to get involved to provide alternative livelihood in Bangladesh due to literacy and poverty.
  - ❖ Distribution of benefits must be equitable
    - ▪ e.g. Whale sharks in Maldives

- Legal issues arise
- In Bangladesh, Government provides one month of food subsidy in exchange for fishermen not going to sea

India

- MPAs declared for biodiversity protection (species or habitat)
- Within all national parks, all activities restricted
- Pre-declaration of MPAs there may be information available, but once declared, regular monitoring does not occur
- Little information on socioeconomic aspects
- When it comes to participation, though there are *legal systems in place* calling for participation, it does not necessarily translates to local level (sometimes, local manager not interested and may not have time)
- Few management authorities understand both terrestrial and marine well
- Because same framework used for terrestrial and marine, many of these PAs do get reviewed, but, the right indicators not necessarily chosen, and managers are left unsure what to evaluate

Bangladesh

- MPAs are mainly for fisheries management.
- MPAs have been declared to protect shrimp (i.e. Cox's Bazaar). Research indicates that shrimp breed in specific areas, and these have been declared MPAs.
- Challenges:
  - ❖ Capacity constraints (human, manpower, no research vessels)
  - ❖ There is a need for fishery people to make it clear to policy decision makers, why MPAs are important.

Maldives

- Main objectives of MPAs in Maldives are tourism and biodiversity conservation.
- In order for MPA to be effective, it has to move beyond simply declaring management plans, and focus on *site level* implementation. There is no reason to make a management plan if it cannot be enforced. So need to focus on enforcement and management.
- Coral cover gone down in some areas, because once area is declared as MPA that attracts the tourists. So sometimes, biodiversity can be better achieved when the area is *not* declared as MPA.
- Problems with encroachment.
- In order to increase effectiveness, it is important for MPAs to be representative, connected and large enough.

- There are protected areas for whale sharks and manta rays but, hotels *guarantee* tourists will see them which put pressure on local species. All tourists jump on whale sharks when they appear

Thailand

- Objective of MPAs is to protect national resources
- Many National Acts and Policies are relevant to MPAs
- All MPAs are no-take zones, but tourism is allowed
- Critical issues:
    - High numbers of tourists coming to MPAs
    - Government must balance between environmental concerns and tourism
- Try to limit number of tourists – carrying capacity studies have been done (Mu Ko Surin and Mu Ko Similan) but difficult to control number of tourists
- Monitor number of visitors to MPAs.
- Use 'Limited Acceptable Change' method to control carrying capacity.
- No management committees in place at local level (most MPAs are under National Government)

Indonesia

- Main objectives of MPAs is biodiversity conservation
- MPAs include multiple use zones
- There is a need to focus on alternative income sources (seaweed collection) and use alternative fishing gear that is more environmentally friendly.
- Challenges in alternative livelihoods, education of targeted communities sometimes primary school, so challenges in finding alternative livelihoods
- Law enforcement remains a challenge, as areas scattered across wide area
- Many government agencies involved Marine Affairs and Fisheries, Police - yet challenges in ensuring true collaboration
- There are local management committees for enforcement - local management committees who cooperate with government to help with management – these are proving successful

Myanmar

- MPAs are mainly set up for biodiversity protection and fisheries management
- Fish fry and crabs are *released* into protected areas
- Mangrove re-plantation important and occurring around some MPAs

- Law enforcement is very strong (Navy and Army patrol around MPAs, but this information is not widely disseminated, as it is the military).
- Problems: Encroachment by illegal foreign vessels into island MPAs

Sri Lanka

- Hikkaduwa MPA: Fringing reef with rich biodiversity.
- There is a no-take research zone
- Because of conflict in east and north, Hikkaduwa MPA was one of few places public could access. As a result, many local and international tourists came to this area.
- As consequence, site level issues: competition over small space (between glass bottom boats, fishers, tourists on beaches)
- Committee established with hotel owners, glass bottom boat operators, local authority, fishermen's association, local committee: made profile of area, which turned into management plan
- Under management plan:
    - ❖ Fishermen supposed to leave reef area.
    - ❖ Number of boats allowed to operate in area became limited (50 boats). Hotels asked to hook up to common waste line
- Implementation challenges:
    - ❖ Glass bottom boats – wanted more permits
    - ❖ Many fishermen didn't want to move to new harbor
    - ❖ Hotels supposed to pay fee for connecting to waste water line, but unwilling
    - ❖ However, many successes in Hikkaduwa

Malaysia

- There is one department to manage Marine Parks (DMP)
- Marine Parks are no-take zone, meant to conserve biodiversity and for fisheries management
- Generally, marine parks are successful
- There is need for continuous monitoring of coral reefs, fisheries and socioeconomic data

- There are MPAs (not in BOBLME area) where tourists can come to area, but are not allowed to stay on island overnight
- Additional alternative livelihood programs needed

Group 3 – Regional Level Activities and Needs

The regional level activities and needs were discussed by Group 3 and the activities and priority rankings by the group for each of the activities are summarized in the table below.

No	Regional level Activities	Ranking
1	Specific transbounndary resources Exchange of information Management of transboundary species	1
2	Sharing advantage in specific skills among other BOBLME countries e.g: scuba diving , ecotourism, dolphin watching	
3	National legislation Harmonizing by capturing the process and evolution of legislation in the different countries	4
4	Improved and more effective website Make it more capable, more effective to improve the sharing capacity Provide more information and allowing the information exchange Such as include a forum of discussion	3
5	Developing common framework of MMA/MPAs	
6	Measuring and evaluating progress (simple reliable assessment)	
7	Rehabilitation MPAs	
8	Studies: *Anguilla* (eel) species	
9	Transboundary species and capacity management	6
10	Indicators for stock assessment	5
11	Managing no-take zone	
12	Climate Change impact	
13	Generating compliance and enforcing mechanisms (what works and why)	2

4.2.3 Nomination for Working Group on MPAs

After the presentation of the working group outputs, the participants were requested at the plenary to make nomination of a working group on MPAs for the BOBLME project. The institutions identified for the nominees are as listed below. The participants felt that they will have to discuss this with their respective governments regarding the appropriate persons to be nominated for the working group on MPAs. They however listed the organizations from which the working group members will be nominated. The list is as follows.

Bangladesh

- BFRI
- Department of Fisheries
- Deptartment of Environment

India

- Wildlife Institute of India
- CMFRI (Ministry of Agriculture)
- CLMRE (Cochin)
  (Ministry of Arts & Sciences)

Indonesia

- Ministry of Marine Affairs and Fisheries
- DG Marine Coastal and Small Islands
- DG Capture Fisheries
- Ministry of Forestry

Maldives

- EPA
- Ministry of Fisheries and Agriculture

Malaysia

- Department of Marine Parks (Ministry of Natural Resources and Environment)
- Department of Fisheries
- Department of Environment

Myanmar

- Department of Fisheries (Ministry of Livestock and Fisheries)
- Planning and Statistics Department (Ministry of Forestry)
- DG. NCEA

Sri Lanka

- Department of Wildlife Conservation (Ministry of Agrarian Services)

- Department of Fisheries and Aquatic Resources
- NARA

Thailand

- Department of Marine and Coastal Resources
- Department of National Parks, Wildlife and Plant Conservation
- Department of Fisheries

5.0 SUMMARY OF ACCOMPLISHMENT AND RECOMMENDATIONS

The workshop recognized the importance of MPAs and fish refugia as tools in fisheries management for Large Marine Ecosystems. The workshop has reinforced the mandate to develop a programme to directly focus on MPAs in the BOBLME project countries. Entry at several levels will be explored. The workshop also acknowledges the need to get a matrix of definitions of MPAs and fish refugia that can be used and accepted by the different countries in BOBLME. The workshop also recommended the enrolling of pilot sites from the various countries. Nominations should be made by the countries. The workshop participants appreciated the status review on MPAs undertaken by the partner institution and considered it a very good exercise in updating the knowledge base on MPAs in the BOBLME countries and also provided the road map for further work that needs to be done to improve the knowledge on the inventory of MPAs and fish refugia in the BOBLME countries. The workshop concluded with agreeing to nominate members to serve in the MPA working group. The institutions from where the nominations are to be made were identified at the plenary session. Each country should nominate two to three people from at least two institutions involved in fisheries and marine resource management.

The workshop was closed by Dr. Rudolf Hermes, the Chief Technical Advisor to the BOBLME project and organizer of the workshop, with thanks to the host, The WorldFish Center for the excellent venue and ambience and logistic support provided for the workshop. Thanks were also extended to all the participants for the time and active interaction during the workshop. Dr. Rudolf also thanked all resource persons and the facilitator, Dr. Kuperan, for the smooth running of the workshop discussions.

6.0 REFERENCES

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APPENDIX 1: WORKSHOP AGENDA

DAY 0: Monday, Jan 17

18:00	Pre-workshop meeting for organizers and facilitators

DAY 1: Tuesday, Jan 18

08.15	Registration
09:00	Opening remarks and welcome Dr. Rudolf Hermes, CTA, BOBLME Dr. Neil Andrew, Discipline Director of NRM, The WorldFish Center Mr. Ismail Ishak, FRI Penang, DoF, NC BOBLME Puan Shahima Ab. Hamid, Director, DMPM, MRE, PSC BOBLME
09:30	BOBLME Project Overview by Dr Rudolf Hermes
09:45	Workshop goals and introductions of participants -Facilitator: Dr. Kuperan
10:00	Tea/Coffee Break/Photo
10:15	Introduction to BOBLME context, general status of MPAs and study methods by Dr. Patrick Christie, University of Washington
10:35	Eight country profiles - Presentation by Ms. Katrina Ole-MoiYoi (Opportunity for brief questions; detailed review on Day 2)
11:45	Status of MPA databases and mapping by Ms. Moi Khim Tan
12:15	Lunch
13:30	Summary comments and initial recommendations followed by questions (Dr Patrick Christie)
14:30	Social Dimension of MPAs (Presentation by Ms. Ramya Rajagopalan)
15:00	Fish refugia concept and experiences from UNEP/South China Sea (SCS) Project and USAID FISH Project (Presentation by Prof. Nygiel Armada)
15:30	MPA Network System concept and application in CTI Indonesia (Presentation by Dr. Suseno Sukoyono)
16:00	Tea/Coffee Break
16:15	Use of MPAs in the context of fisheries: CCRF Technical Guidelines on MPAs and Fisheries (Presentation by Ms. Lena Westlund)
16:45	Wrap-up for day and closing (Hard copies of country profiles and review questions will be provided to country representatives to review over night)
19:00	Welcome Dinner

DAY 2: Wednesday Jan 19

08:45 Opening and review of Day 1, introduction to Day 2 – Facilitator Dr Kuperan
09:00 Review of country profiles (break out groups discuss)
10:00 Plenary feedback
10:30 Tea/Coffee Break
10:45 Instructions for break out groups--Breakout discussion groups to formulate ideas and consensus on:

i. Critical information support needs and analysis for MPA system development—nationally and regionally (transboundary)

ii. Effectiveness of existing system of MPAs in: (a) conserving biodiversity of global importance, and (b) providing critical habitat for priority transboundary fish stocks – supporting and hindering factors / attributes

iii. What regional level activities will your country benefit from (e.g. information exchange, knowledge management, databases, workshops, studies)?

10:50 Break out groups discuss
12:30 Lunch
13:30 Breakout groups continue and consolidate output
14:00 Groups present their results (10 minutes each)
15:30 Tea/Coffee break
16:00 Summary of work accomplished, Conclusions and Recommendations
16:30 Next steps: Working Group / Network of Regional MPA Experts; Regional Action Plan
17:00 Closing of workshop

Note: Country delegates can provide statements / short presentations on key information regarding their country's MMA/MPA practices and experiences. These will appear as Annex to the Workshop Report, but there is no dedicated time slot for country presentations.

APPENDIX 2: LIST OF PARTICIPANTS

Bangladesh

Dr. Md. Enamul Hoq
Project Director, Support to BOBLME
Bangladesh Fisheries Research Institute (BFRI)
Mymensingh
Bangladesh
hoq_me@yahoo.com
Tel: +8809162623
Fax: +8809166559

Dr. Md. Mafizur Rahman
Deputy Secretary
Ministry of Fisheries & Livestock
Dhaka
Bangladesh
mafizur18@yahoo.com
Tel: +88027169563

Dr. Md. Sharif Uddin
Assistant Director
Marine Fisheries Office, DoF
Chittagong
Bangladesh
sharifbd64@yahoo.co.uk
Tel: +880312517390
Fax: +880312518149

India

Dr. J R Bhatt
Director
Ministry of Environment and Forests
Paryavaran Bahavan, CGO Complex
Lodhi Road, New Delhi 110 003
India
jrbhatt@nic.in
Tel: +9111 24363962
Fax: +9111 24363962

Ms. Ramya Rajagopalan
Consultant
International Collective in Support of Fishworkers (ICSF)
27 College Road
Chenai 600 006
India
icsf@icsf.net
Tel: +91-44-28275303
Fax: +91-44-28254457

Indonesia

Mr. Rofi Alhanif
Head
Convention and Conservation Utilisation Section
Directorate of Marine and Aquatic Conservation
DG of Marine, Coastal and Small Island affairs, MMAF
Indonesia
rofi_p3k@yahoo.com
Tel: +6281310668833
Fax: +62213522045

Mr. Basuki Rahmat
Lecturer
Department of Waters Resource Management Technology
Jakarta Fisheries University
Agency for Marine and Fisheries Human Resources Development
Jl. Aup, Pasarmineev
Jakarta Selatan, 12520
Indonesia
basukistp@yahoo.co.id
Tel: +628128533407
Fax: +62217805030

Dr. Suseno Sukoyono Sosrosubroto
Minister's Adviser for Economic, Social and Cultural Affairs
Ministry of Marine Affairs and Fisheries
Mina Bahari Bld II
17th Floor
Jl Medan Merdeka Timur No 16
Jakarta Pusat, Indonesia
suseno.sukoyono@gmail.com;

ssn_id@yahoo.com
Tel: +62 21 3522516

Mr. Widodo
Fisheries Engineer
The Fishing Technology Development Center of Semarang (BBPPI)
Indonesia
dodo_opal@yahoo.com
Tel: +6281325887667

Malaysia

Mr. Ismail Bin Ishak
Coordinator, International Affairs
Fisheries Research Institute
Department Of Fisheries
Batu Maung, Pulau Pinang
Malaysia
Anasofiah@Hotmail.Com
Tel: 04-6263925/26
Fax: 04-6262210

Dr. Kuperan K Viswanathan
Professor
University Utara Malaysia
College of Arts and Science
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman
Malaysia
kuperan@uum.edu.my;
kuperan@gmail.com
Tel: +604-9283624
Fax: +604-9286781

Ms. Shahima AB Hamid
Director
Planning and Management Division
Department of Marine Park Malaysia
Ministry of Natural Resources and Environment
Aras 11, Wisma Sumber Asli
NO.25, Persiaran Perdana, Presint 4
62574 Putrajaya
Malaysia
shahima@nre.gov.my
Tel: +60172256933

Mr. Mohd Pauzi Abdullah
Fisheries Research Institute Batu Maung (FRI-BM)
Penang
Malaysia
mpauzi@gmail.com

Mr. Pursumal Gangaram
Manager
Peninsular Malaysia Seas
WWF-Malaysia
19 Jalan SS23/15
47400 Petaling Jaya , Selangor, Malaysia
gpursumal@wwf.org.my
Tel: +603-78033772
Fax: +60378035157

Ms. Roa'a Hagir
Researcher
Centre for Coastal and Marine Environment
Maritime Institute of Malaysia(MIMA)
Unit B-06-08, B 06-11
Megan Avenue II,
12, Jalan Yap Kwan Seng
50450 Kuala Lumpur
Malaysia
roa@mima.gov.my, hgr_roa@yahoo.com
Tel: 03-21612960
Fax: 03-21614035

Dr. Aileen Tan Shau-Hwai
Professor
School of Biological Sciences
Universiti Sains Malaysia
11800 Penang
Malaysia
aileen@usm.my
Tel: 604-6533508
Fax: 604-6533500

Ms. Juliana Mohamed
Student / Fellow Academic
School of Biological Science
University Sains Malaysia
11800, Penang
Malaysia

julianamohamed17@gmail.com
Tel: +60123972474

Maldives

Mr. Ibrahim Naeem
Director
Environment Protection Agency
Nikagas Magu
Malé, 20167
Maldives
Ibrahim.naeem@epa.gov.mv
Tel: + 960 3317562

Mr. Hussain Sinan
Senior Research Officer
Ministry of Fisheries and Agriculture
7th Floor
Velaanaage
Ameeru Ahymed Magu
Malé
Maldives
hussain.sinan@fishagri.gov.mv
Tel: +960 3339266
Fax: +960 3326558

Ms. Shahaama Abdul Sattar
Fisheries Biologist
Marine Research Center
H. White Waves
MoonLight Hingun,
Malé
Maldives
sasattar@mrc.gov.mv
Tel: +960 3322242
Fax: +960 3322509

Myanmar

Ms. Kitty Sein
Deputy Director
Planning and Statistics Department
Ministry of Forestry
Building No 28
Nay Pyi Taw
Myanmar
wynnnhlaing@gmail.com
Tel: 95-67 405376
Fax: +9567405012

Mr. Soe Win
Assistant Director, Minister's Office
Ministry of Forestry
Building No 28
Nay Pyi Taw
Myanmar
soewin1962@gmail.com
Tel: +9567 405074

Mr. Khin Maung Win
Director
Department of Fisheries
Corner of Bayint Naung Road and Bayint Naung Avenue
Insein Tsp
Yangon
Myanmar
fisheries@myanmar.com.mm;
irnp.dof@gmail.com
Tel: +95 1 647536
Fax: +951647529

Sri Lanka

Mr. S A M Azmy
Head
Environment Studies Division
NARA
Crow Island
Colombo 15
Sri Lanka
azmyahamed@yahoo.com
Tel: +94112521009
Fax: +94112521932

Mr. A P Mallikarachchi
Planning Assistant
Ministry of Fisheries and Aquatic
Resources Development
Colombo 10
Sri Lanka
apmallikarachchi@gmail.com

Mr. U I Thaufeek
Depuy Director

Department of Wildlife conservation
388/33, Wewa road
Anuradhapura
Sri Lanka
ddnwmahaweli@gmail.com
Tel: +94252235053
Fax: +94252235053

Thailand

Dr. Anuwat Nateewatana
Marine Biodiversity Specialist
Department of Marine and Coastal Resources
The Government Complex
Building B
120 Chaengwattana Rd. Laksi.
Bangkok 10210
Thailand
anuwat007@gmail.com
Tel: +6621411360
Fax: +6621439239

Mr. Somkiat Soontornpitakkool
Director
Marine National Park Development Center
Department of National Parks, Wildlife and Plant Conservation
Ministry of Natural Resources and Environment
61 Phahonyothin Road, Ladyaow ,
Jatuchak ,Bangkok 10900
Thailand
somkiat.sk@hotmail.com
Tel: +661 9899484
Fax: +6629407264

Ms. Anchalee Yakoh
Fisheries Biologist
Andaman Sea Fisheries Research and Development Center, Department Of Fisheries
24/28 Sakdidet Rd. Udomsuk Soi. Tumbol Vichit. Muang. Phuket. 83000
Thailand
afdecfish@yahoo.com;
anchaleyee@yahoo.com
Tel: +66 76391138
Fax: +6676391139

University of Washington

Dr. Patrick Christie
School of Marine Affairs and Jackson School of International Studies
University of Washington
3707 Brooklyn Ave NE
Seattle, WA 98105-6715
USA
patrickc@u.washington.edu
Tel: 206-685-6661
Fax: 206-543-1417

Ms. Katrina Ole-MoiYoi
Project Research Associate
711 Broadway East #6
Seattle, Washington 98102
USA
kolemoiyoi@gmail.com

FAO Consultant

Prof. Nygiel Armada
Fisheries Management Advisor
USAID FISH Project
18 floor
OMM Citra Bldg.
San Miguel Ave
Ortigas Center
Pasig City, MM
Philippines
nbarmada@mozcom.com
Tel: +6326341618-22
Fax: +6326341621

Ms. Lena Westlund
FAO Consultant
Fisheries and Aquaculture Department
FAO Rome
Badhnsv. 13
132 37 Saltsjo-1300
Sweden
lena.westlund@swipnet.se;
lena.westlund@fao.org

BOBLME

Dr. Rudolf Hermes
Chief Technical Advisor

Bay of Bengal Large Marine Ecosystem Project (BOBLME)
C/- Andaman Sea Fisheries Research Development Center
77 Sakdidej Rd
Phuket 83000
Thailand
rudolf.hermes@fao.org

Ms. Sucharat Tong-on
Secretary
Bay of Bengal Large Marine Ecosystem Project (BOBLME)
C/- Andaman Sea Fisheries Research Development Center
77 Sakdidej Rd
Phuket 83000, Thailand
Sucharat.TongOn@fao.org
Tel: +66 2 697 4173
Fax: +66 2 697 4445

Mr. Nishan Deepal Sugathadasa
Technical Officer
Bay of Bengal Large Marine Ecosystem Project (BOBLME)
C/- Andaman Sea Fisheries Research Development Center
77 Sakdidej Rd
Phuket 83000
Thailand
nishan.sugathadasa@boblme.org

The WorldFish Center
Dr Neil Andrew
Discipline Director
Natural Resources Management
Jalan Batu Maung
Bayan Lepas 11960
Penang Malaysia
Tel: 6202188
Email: n.andrew@cgiar.org

Ms Tan Moi Khim
ReefBase Manager
Natural Resources Management
Jalan Batu Maung
Bayan Lepas 11960
Penang Malaysia
Tel: 04-6202183
Email: m.tan@cgiar.org

Ms Nurulhuda Ahmad Fatan
Research Assistant
Natural Resources Management
Jalan Batu Maung
Bayan Lepas 11960
Penang Malaysia
Tel: 04-6202179
Email: n.afatan@cgiar.org

Ms Teoh Shwu Jiau
GIS/RIS Specialist
Natural Resources Management
Jalan Batu Maung
Bayan Lepas 11960
Penang Malaysia
Tel: 04-6202190
Email: s.teoh@cgiar.org

Mr Stanley Tan
Senior System Analyst
Natural Resources Management
Jalan Batu Maung
Bayan Lepas 11960
Penang Malaysia
Tel: 04-6202182
Email: s.l.tan@cgiar.org

Ms Suhaila Abdullah
Program Assistant
Natural Resources Management
Jalan Batu Maung
Bayan Lepas 11960
Penang Malaysia
Tel: 04-6202178
Email: s.abdullah@cgiar.org

Ms Monique Neoh
Discipline/Portfolio Assistant
Policy Social Economy (PESS)
Jalan Batu Maung
Bayan Lepas 11960
Penang Malaysia
Tel: 04-6202134
Email: h.neoh@cgiar.org

APPENDIX 3: WORKSHOP BROCHURE

Bay of Bengal Large Marine Ecosystem Project Workshop
on
"Status of Marine Managed Areas in the Bay of Bengal"
18-19 January 2011, Penang, Malaysia
Implemented in collaboration with
ICLARM/WorldFish Center
Prospectus

1.0 Background

Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand are working together through the Bay of Bengal Large Marine Ecosystems (BOBLME) Project and lay the foundations for a coordinated programme of action designed to improve the lives of the coastal populations through improved regional management of the Bay of Bengal environment and its fisheries.

The objective of BOBLME Component 3 (Improved Understanding and Predictability of the BOBLME Environment) is to share information with other regional and global environmental assessment programmes for improved understanding of the BOBLME ecological functions and processes. Results and outputs of the various activities described below will also serve as inputs into the finalization of the TDA and into the development of the Strategic Action Programme(SAP).

The objective of the Subcomponent 3.2 (Marine Protected Areas in the Conservation of Regional Fish Stocks) is to develop a better understanding of and promote a more comprehensive approach to the establishment and management of marine protected areas(MPAs) and fish refugia for sustainable fish management and biodiversity conservation objectives. To achieve these objectives, the subcomponent would support the following activities: (i) establishment of a working group of regional experts in MPAs/fish refugia; (ii) review and updating of MPA/fish refugia classification criteria; (iii) inventory and updating of status of existing MPAs/fish refugia in the BOBLME; (iv) a gap analysis to assess effectiveness of existing system of MPAs in: (a) conserving biodiversity of global importance, and (b) providing critical habitat for priority transboundary fish stocks; (v) supporting studies; (vi) establishment of common regional data requirements and protocols to promote national efforts to establish MPAs/fish refugia; (vii) mapping existing and potential MPA/fish refugia sites with GIS technology; (viii) development of a regional action plan that would lead to the strengthening of existing and creation of new priority MPAs/fish refugia; (ix) training and capacity building; (x) awareness and outreach activities; and (xi) preparation of a full sized project (FSP proposal for management of existing and creation of new MPAs).

The BOBLME Implementing Partner University of Washington has produced a "status report" of Marine Protected Areas (MPAs)[3] and fish refugia[4] in the BOBLME, drawing upon and updating the existing reviews and inventories, including legislative framework, MPA design and consultative processes in their formation, MPA objective, MPA management including enforcement. This report constitutes a major input for the planned workshop. MPAs and fish refugia are a subset of Marine Managed Areas (MMAs), in which any form of regulatory regime is applied.

2.0 The Workshop

Objective

The workshop will provide a key contribution to the BOBLME Sub-Component 3.2 by providing a venue for discussion of the status of review report findings, identifying gaps in MPA networks, and areas where design, policy making, data collection and management can be strengthened and harmonized. The Workshop will also draft recommendations for capacity development and other potential interventions.

Expected Outputs

- The establishment of a BOBLME Marine Managed Areas Working Group of regional experts;
- A review and updating of MPA/fish refugia classification criteria;
- Creation of an inventory and updating of status of existing MMAs in the BOBLME;
- A gap analysis to assess effectiveness of existing systems of MMAs;
- Input in to the final MMA status review report;
- Recommendations for capacity development and other potential project interventions.

Date and Venue

The workshop will be held at ICLARM/WorldFish Center on the 18-19 January 2011 in Penang, Malaysia.

[3] Marine Protected Areas (MPA) are defined by IUCN as "any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment".

[4] Fish refugia are MPAs that have been set up to protect a fishery resource during some part of its life history, usually during spawning or during the juvenile stage.

3.0 Pre-workshop preparations

To facilitate discussion and the achievements of workshop outputs, country delegates are requested to familiarize themselves with the background and overall thrust of the Bay of Bengal Large Marine Ecosystem Project (www.boblme.org) as a project under the GEF International Waters portfolio, implemented to address transboundary priority issues and to formulate a Transboundary Diagnostics Analysis (TDA) and a Strategic Action Programme (SAP).

Country delegates should be in the position to provide updated information on their respective country's approach to Protected Area Management and governance across sectoral instutions (fisheries, environment, parks etc.) and multiple layers of jurisdiction (local, provincial, national, international). Country delegates can also provide a short country statement on key information regarding their country's MPA practices and experiences; this is not for oral presentation but will be included as Annex to the Workshop Report.

4.0 Conduct of the Workshop

The workshop will be conducted in English following an agreed agenda. A draft agenda has been circulated. The Workshop will comprise an introductory session, a technical session of presentations followed by country- or sub-regional-level working group discussions and preparation of statements, conclusions, and recommendations.

Participants

The participants will include Marine Protected Area specialists and practitioners from the eight BOBLME countries, resource persons and facilitators.

5.0 Travel and related arrangements

The BOBLME Project will be making arrangements for travel (most direct and least costly route) and DSA payments of the participants. Travel arrangements will be done after confirmation of nomination/participation is received.

Designated Workshop Hotel is the Equatorial Hotel, Penang (see also information note).

6.0 Contacts

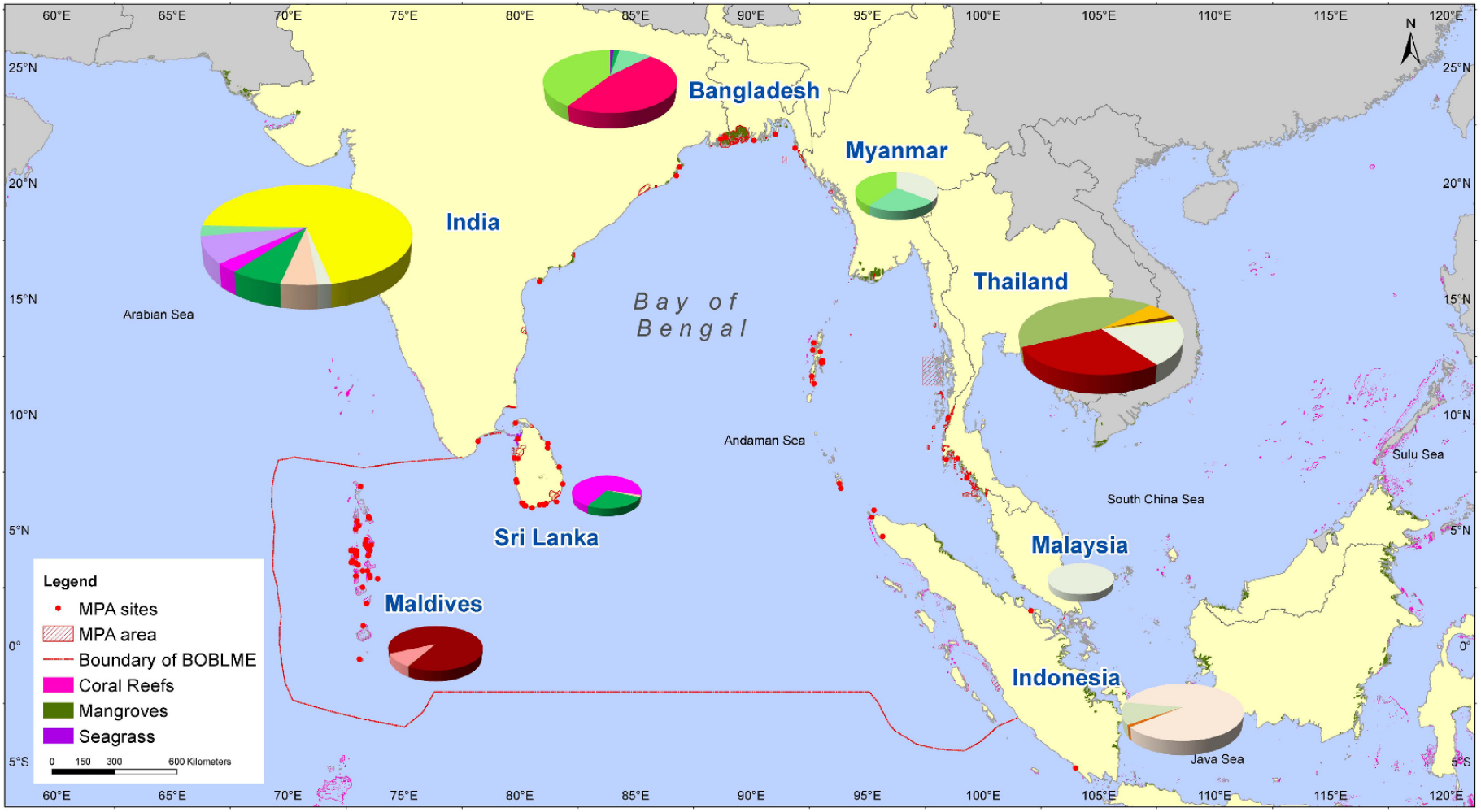
For any further information or clarification on the workshop please contact:

Dr. Rudolf Hermes

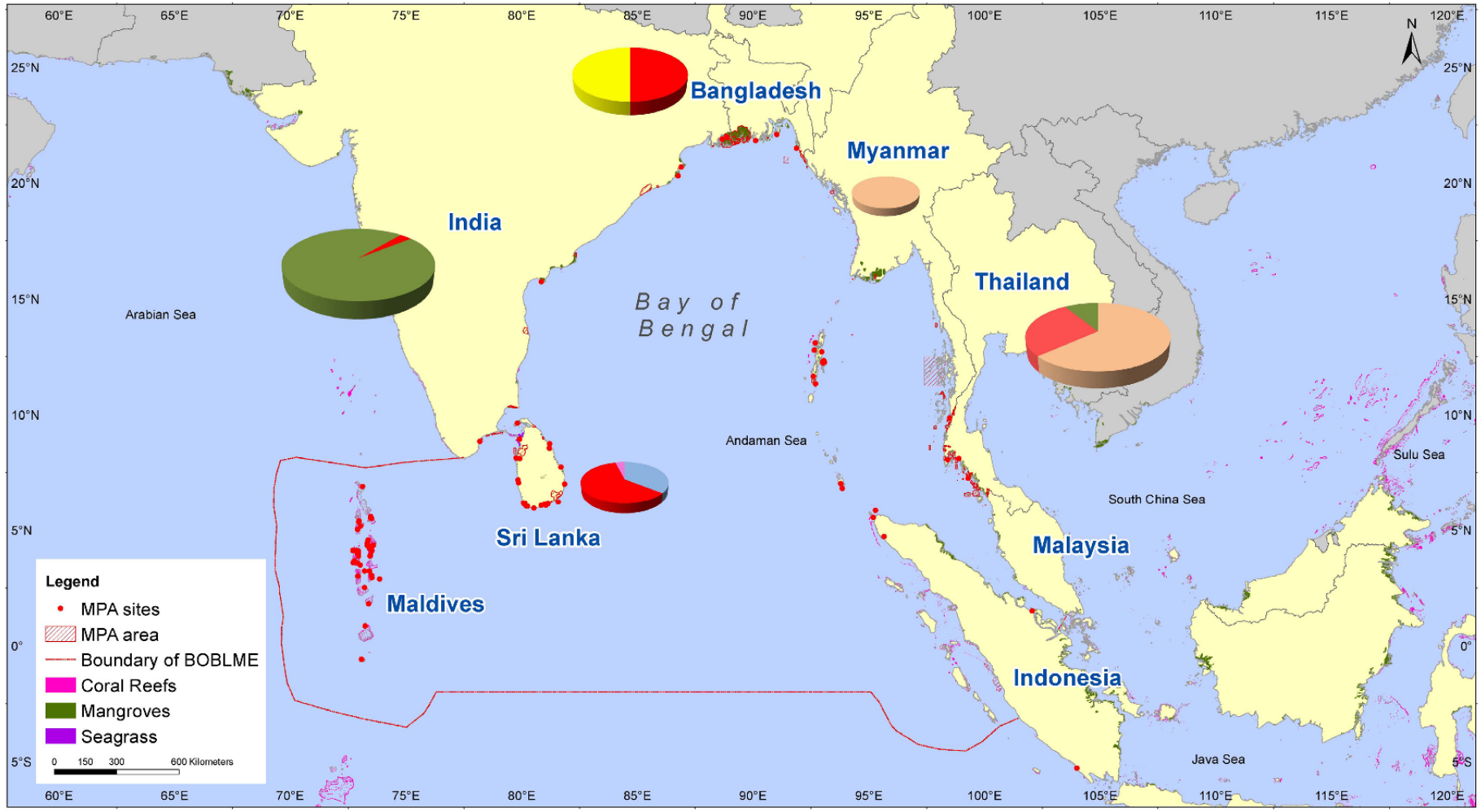
Chief Technical Advisor, Bay of Bengal Large Marine Ecosystem Project

Email:Rudolf.hermes@boblme.org

APPENDIX 4: REGIONAL AND COUNTRY MAPS OF BOBLME MARINE PROTECTED AREAS



Map of Total Area of MPA (Ha) by National Designation

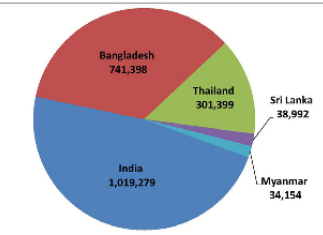


International Status

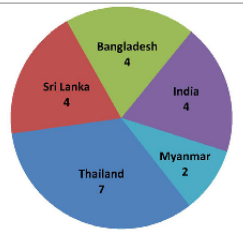
- SAM site
- ASEAN Heritage Park
- RAMSAR site
- UNESCO Biosphere Reserve
- UNESCO MAB
- World Heritage Site

MAP OF TOTAL AREA OF MPA(HA) BY INTERNATIONAL STATUS

Data Source:

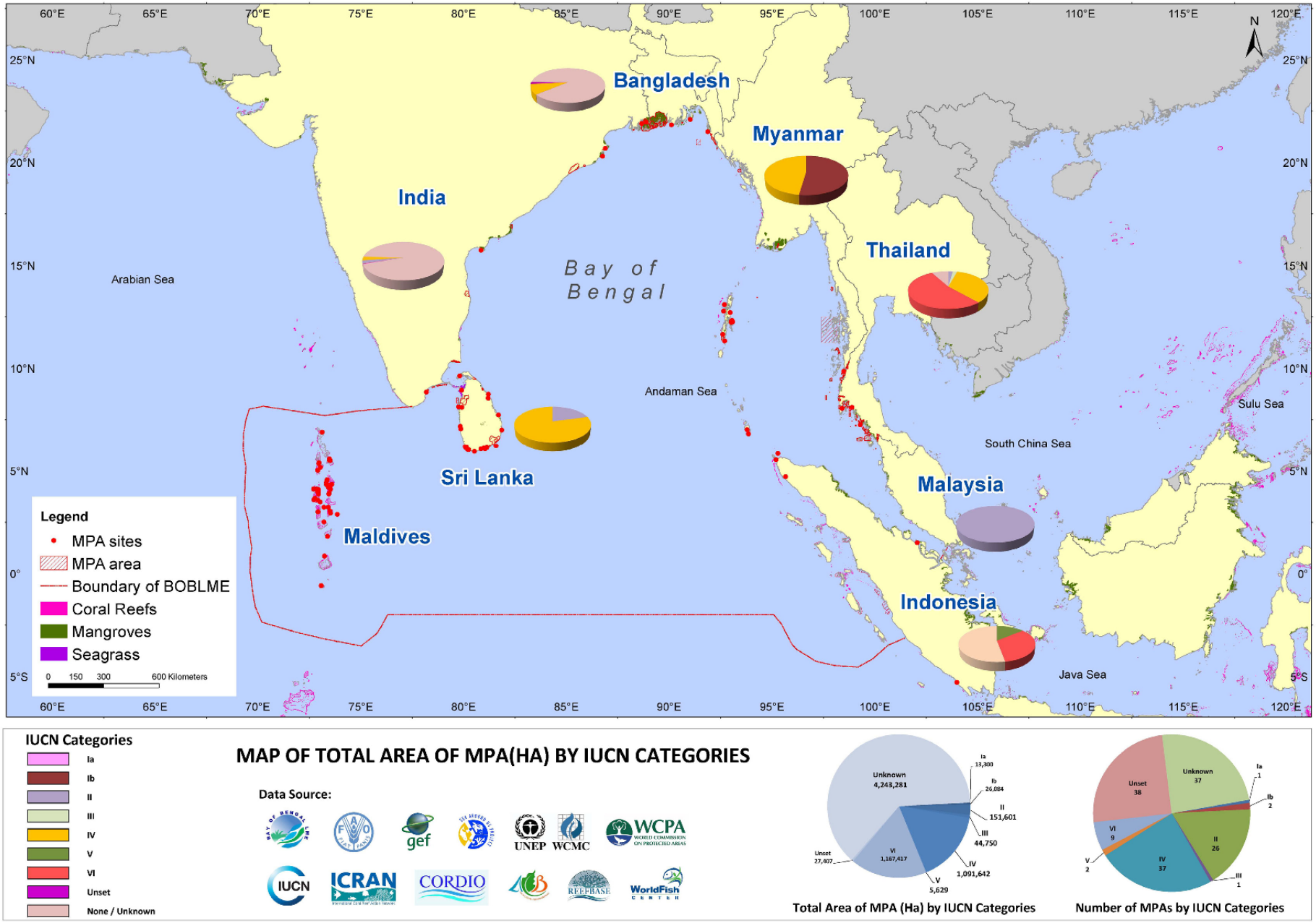


Total Area of MPA (Ha) by Country

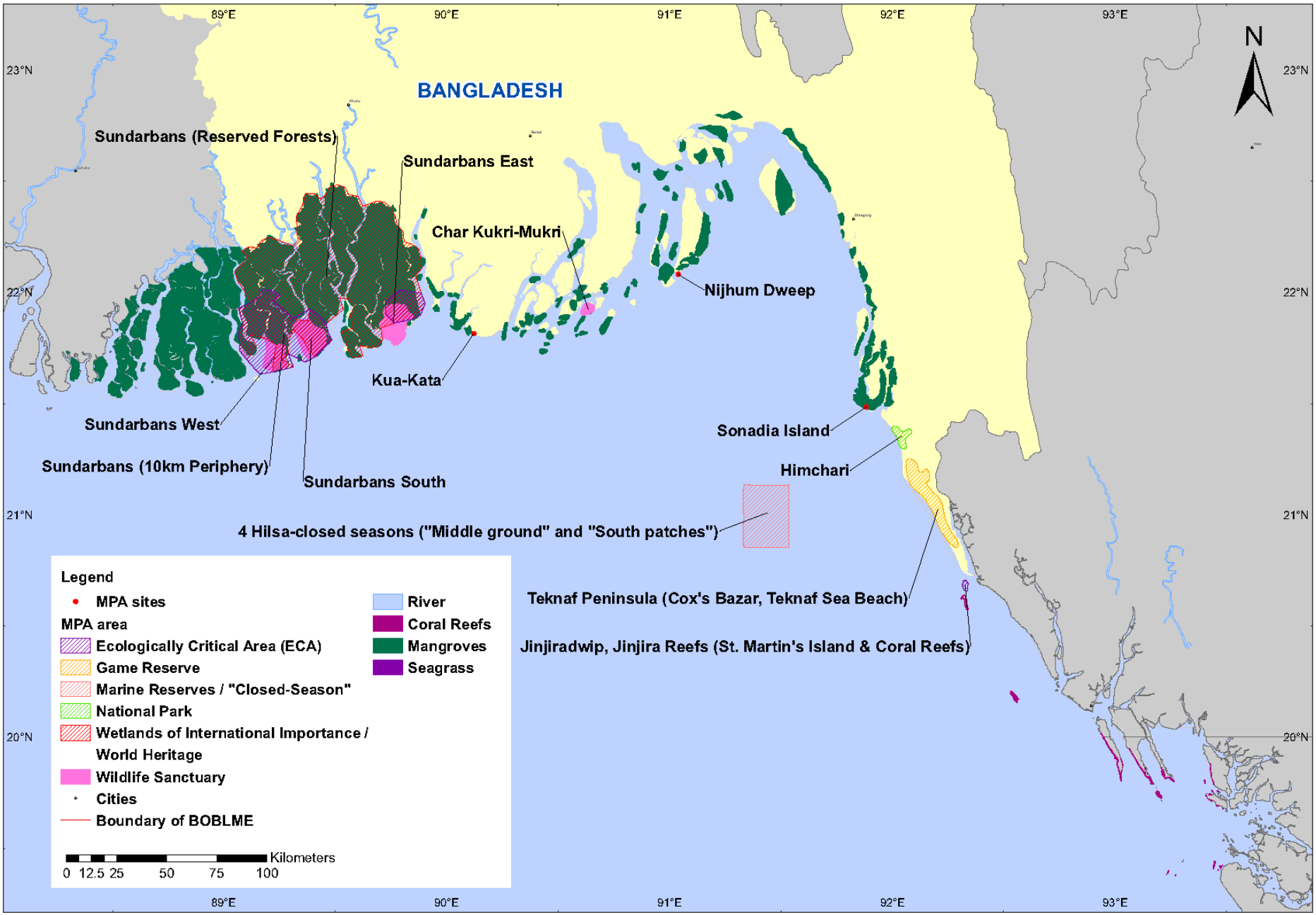


Number of MPAs by Country

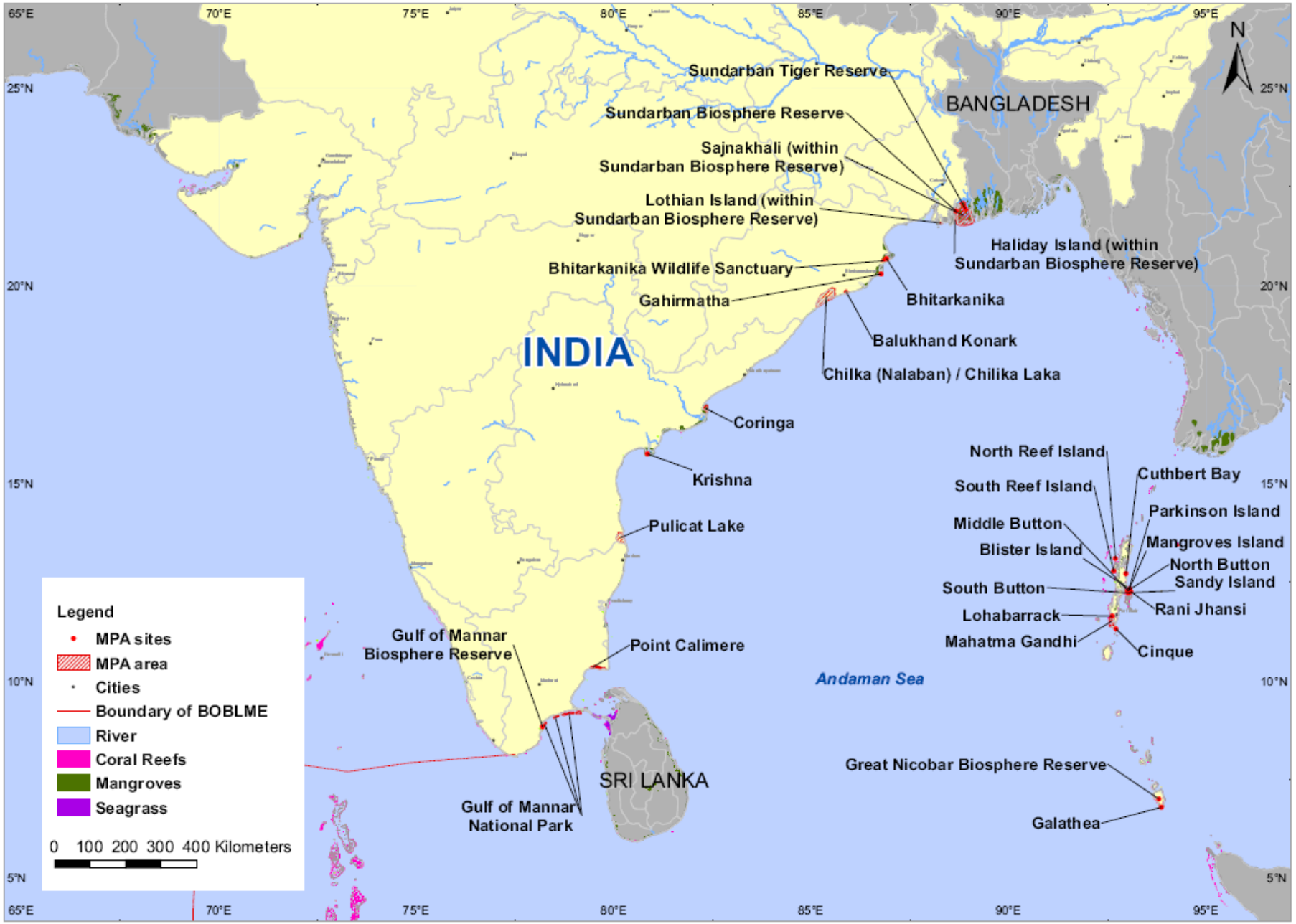
Map of Total Area of MPA (Ha) by International Status



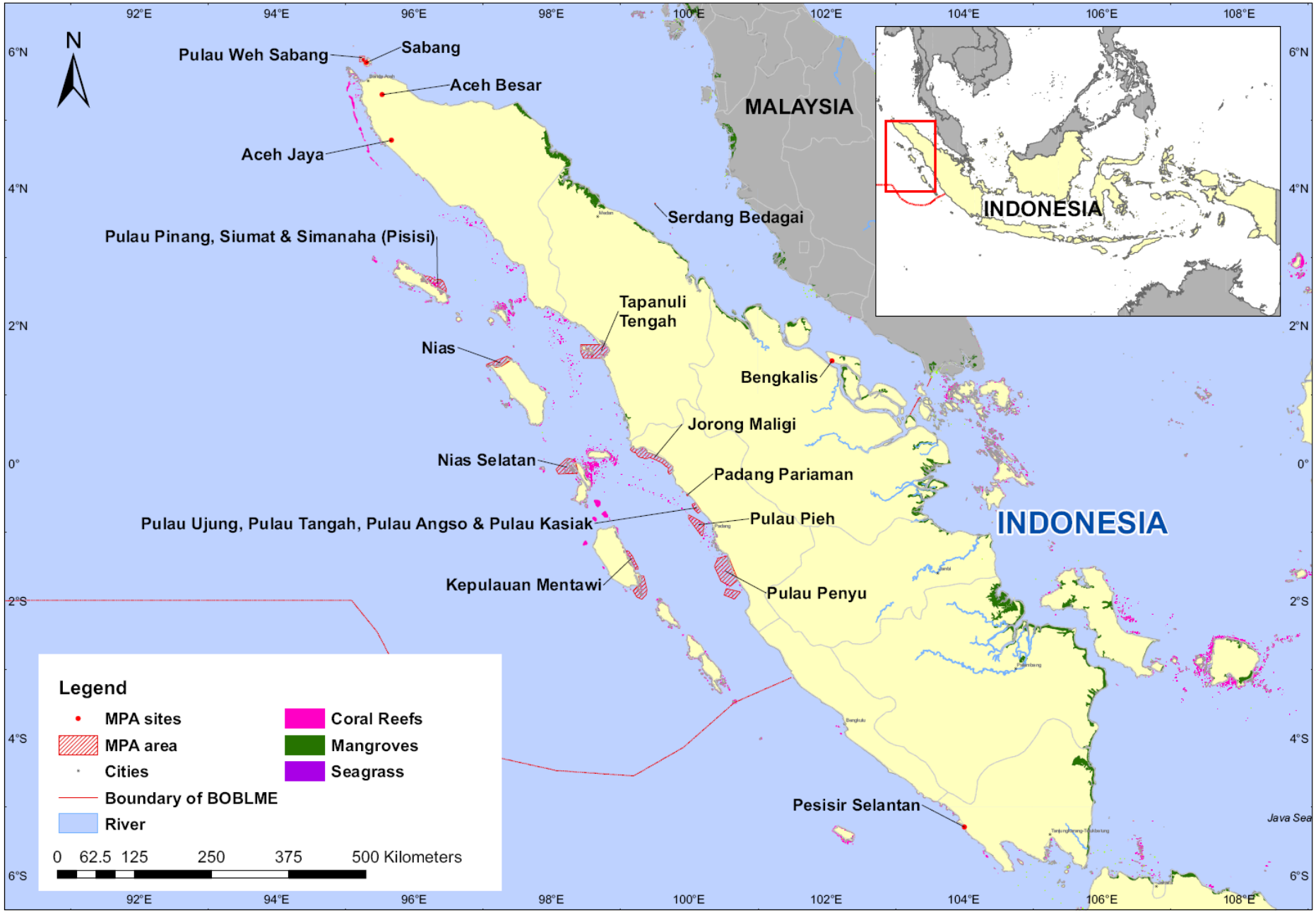
Map of Total Area of MPA (Ha) by IUCN Categories



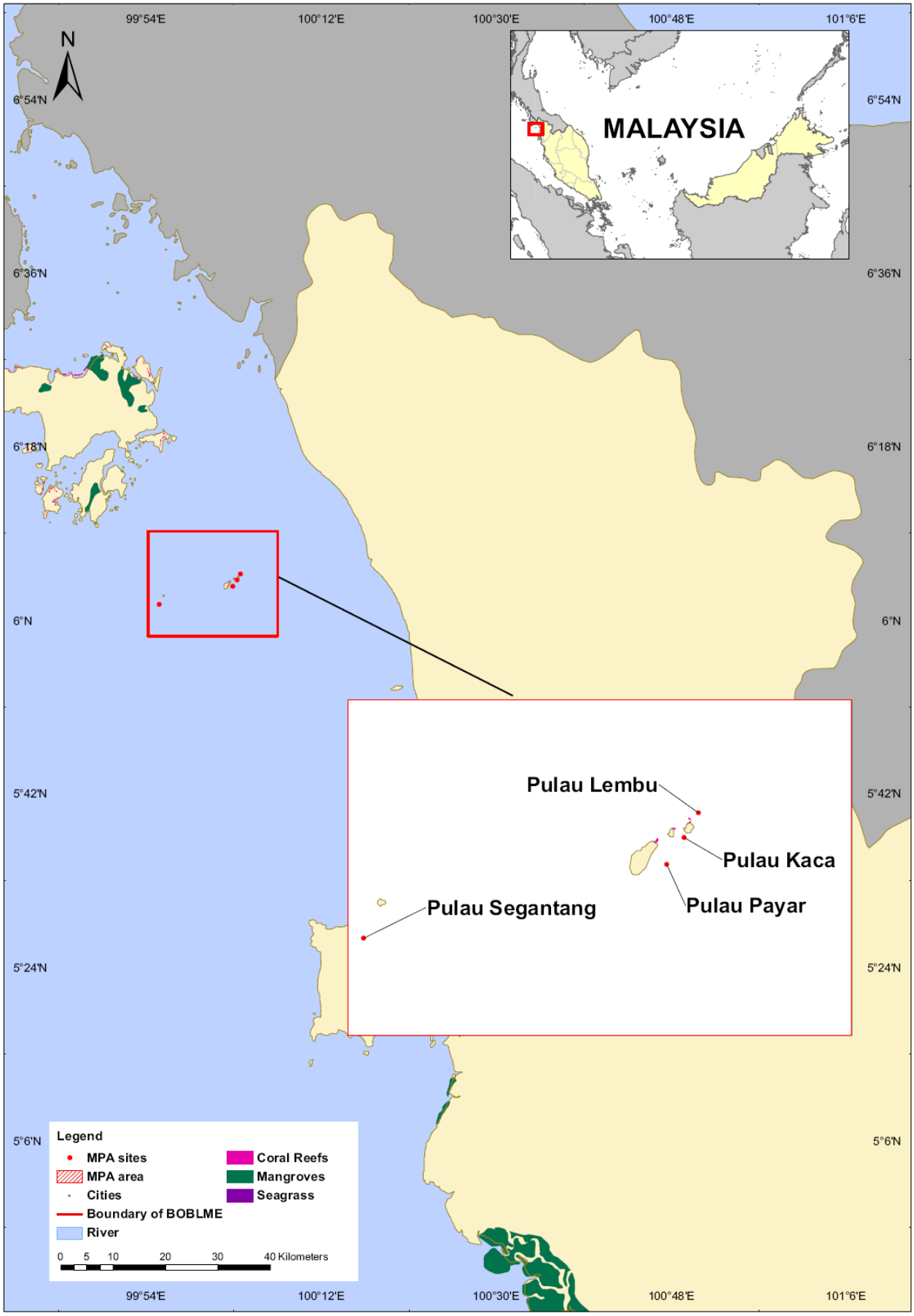
Map of Bangladesh Marine Protected Areas



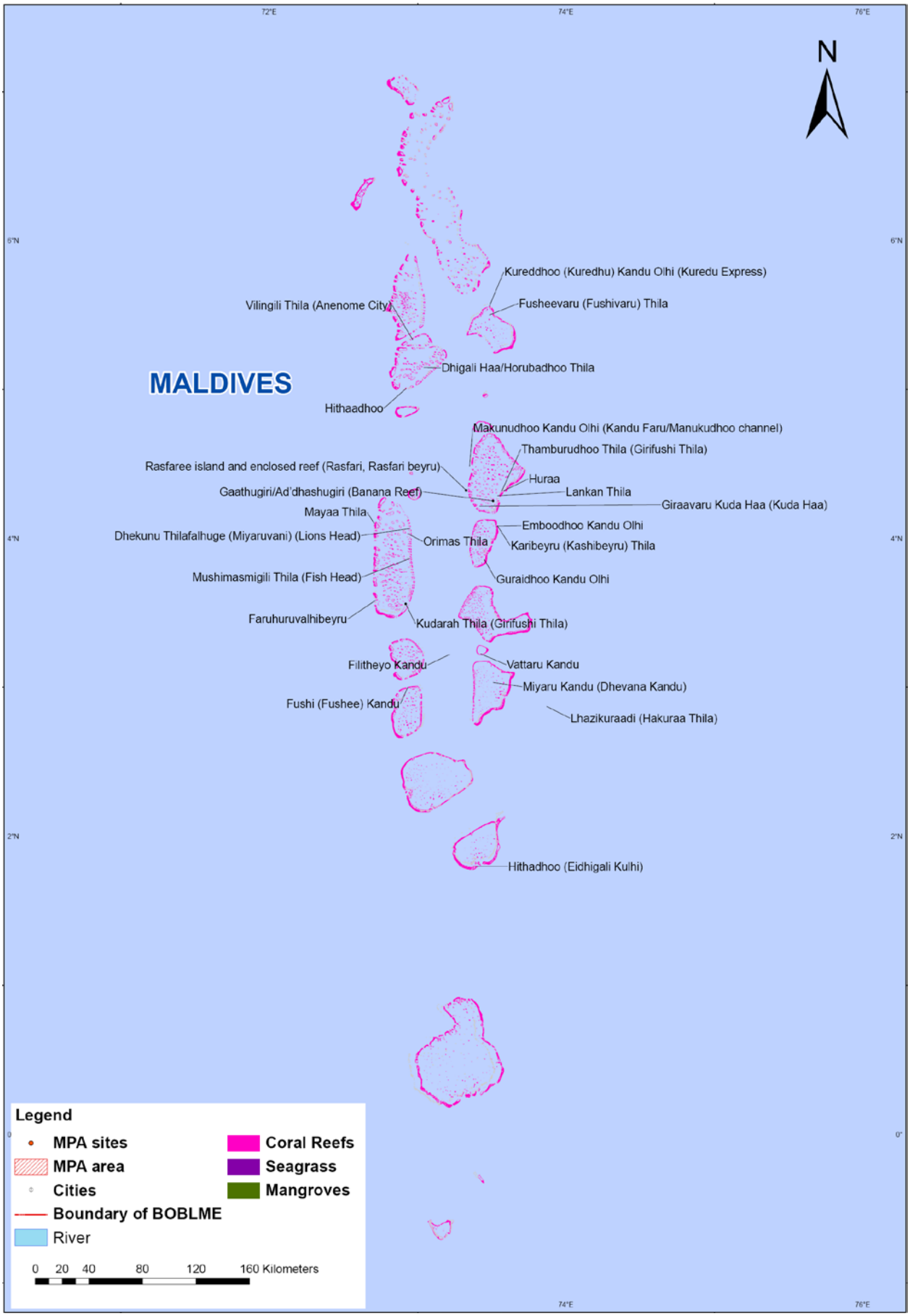
Map of India Marine Protected Areas



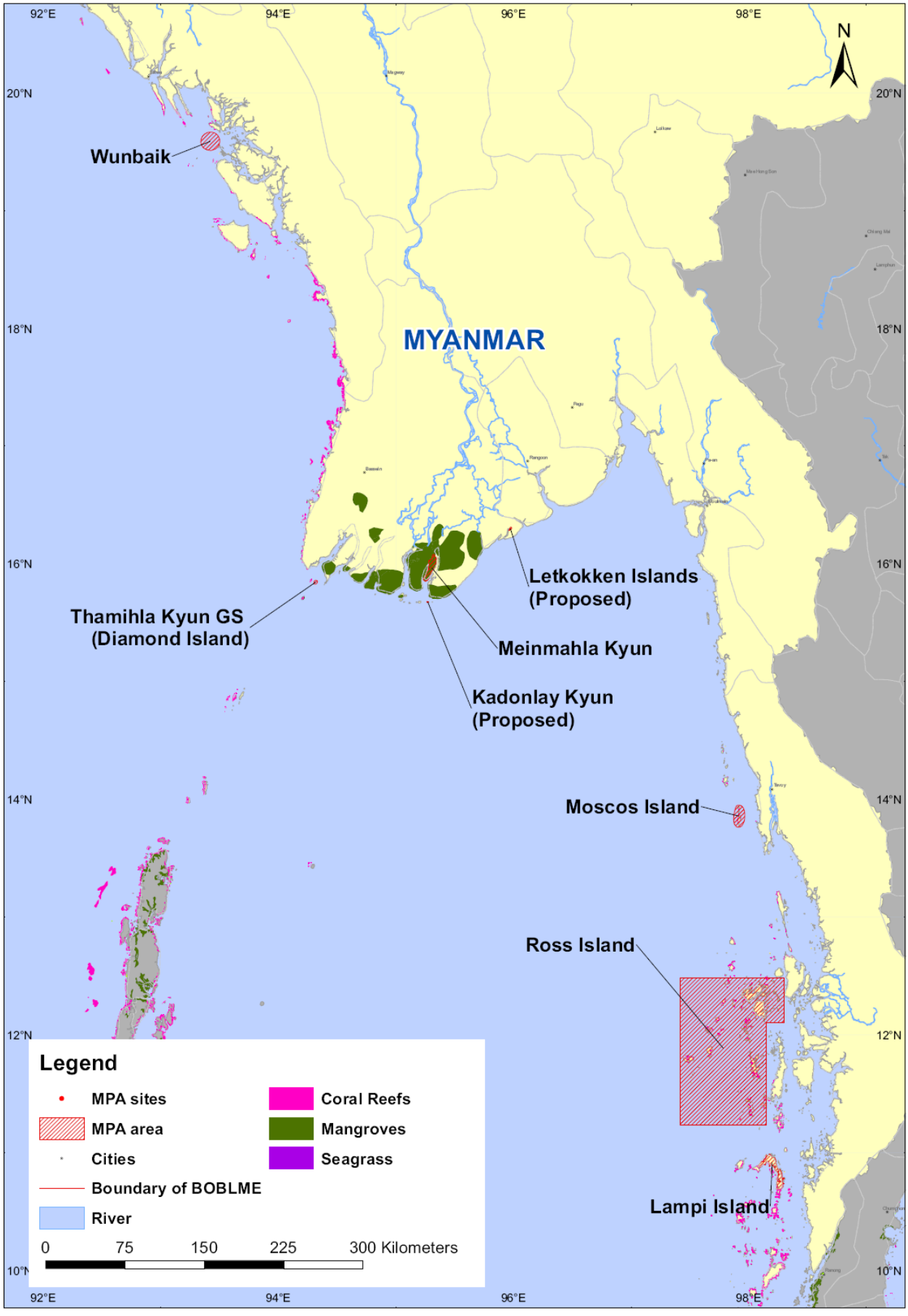
Map of Indonesia Marine Protected Areas



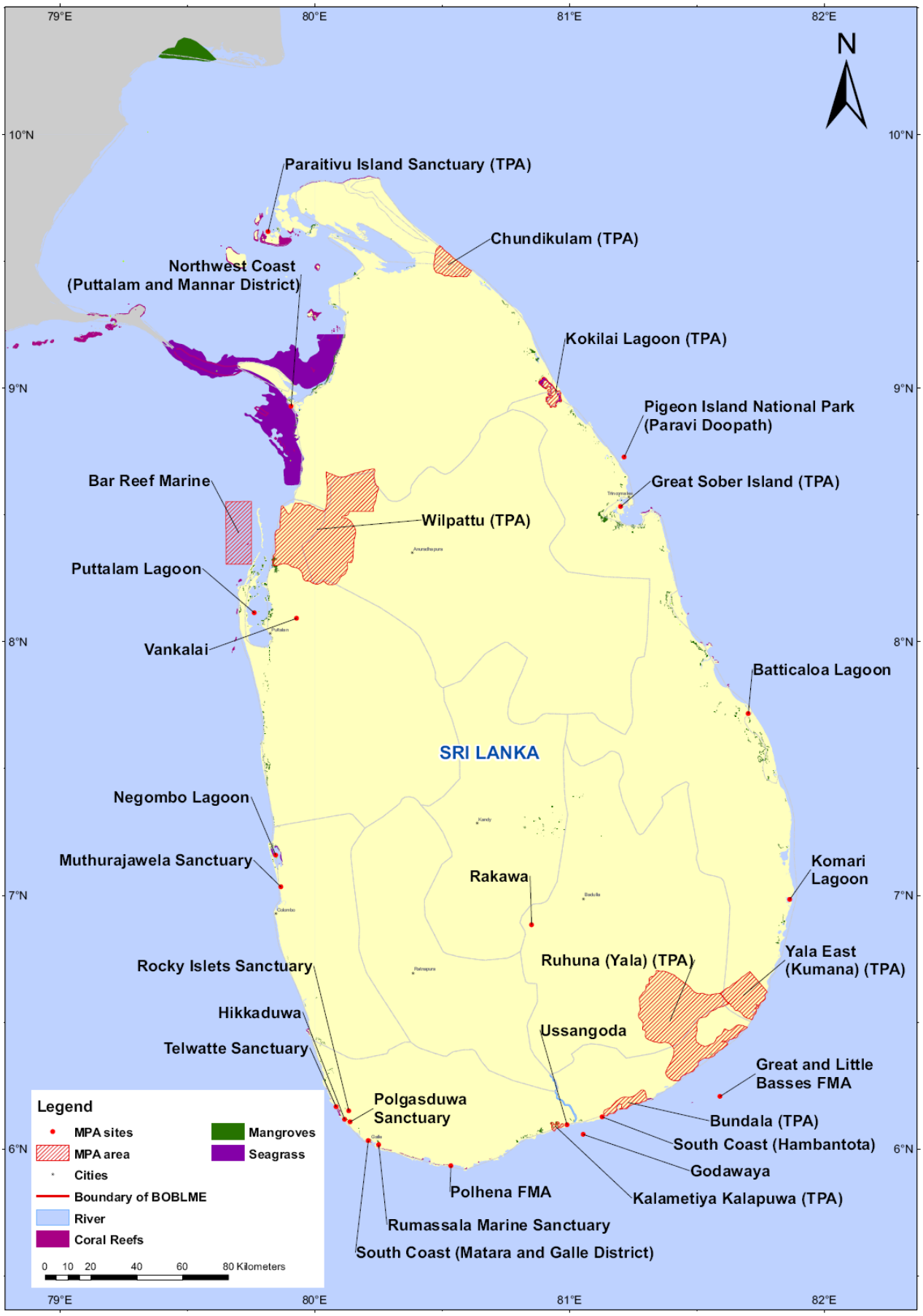
Map of Malaysia Marine Protected Areas



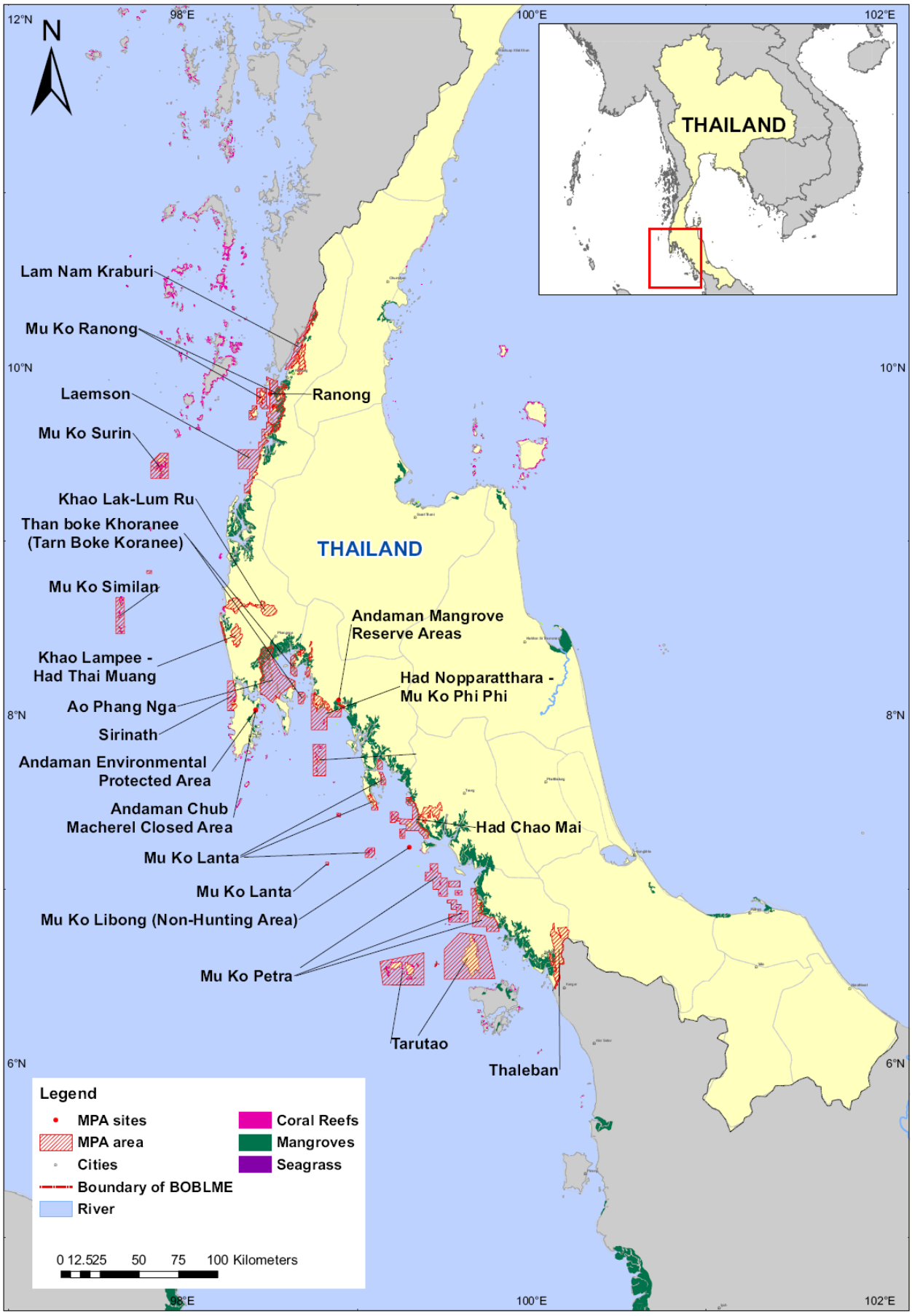
Map of Maldives Marine Protected Areas



Map of Myanmar Marine Protected Areas



Map of Sri Lanka Marine Protected Areas



Map of Thailand Marine Protected Areas

Data Source of MPAs data:

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Protected areas extracted from **the** [Annual Release 2009 (web download version), February 2009] ***World Database on Protected Areas (WDPA). The WDPA is a joint product of IUCN and UNEP prepared by UNEP-WCMC and the IUCN- WCPA working with Governments, the Secretariats of Multilateral Environmental Agreements, collaborating Non-Government Organizations and individuals. For further information go to www.wdpa.org or contact: protectedareas@unep-wcmc.org.***

Metadata / Data Source of Map layers

Data layer	Source	Version/Date of dataset
Coral Reefs	Millennium Coral Reef Mapping Project validated maps provided by the Institute for Marine Remote Sensing, University of South Florida (IMaRS/USF) and Institut de Recherche pour le Développement (IRD, Centre de Nouméa), with support from NASA. Millennium Coral Reef Mapping Project unvalidated maps provided by the Institute for Marine Remote Sensing, University of South Florida (IMaRS/USF), with support from NASA. Unvalidated maps were further interpreted by UNEP-WCMC. Institut de Recherche pour le Développement (IRD, Centre de Nouméa) do not endorse these products. Other data have been compiled from multiple sources by UNEP-WCMC. Full source information is attached to individual polygons.	V 1.0 March 2010
Seagrass	Seagrasses extracted from version 2.0 of the global polygon and point dataset compiled by UNEP World Conservation Monitoring Centre (UNEP-WCMC), 2005. For further information, email: spatialanalysis@unep-wcmc.org	2005
Mangrove	This global dataset shows the distribution of mangroves and was compiled by UNEP-WCMC in collaboration with the International Society for Mangrove Ecosystems (ISME). These data were published in: Spalding, M.D., Blasco, F. and Field, C.D. (Eds). 1997. "World Mangrove Atlas". The International Society for Mangrove Ecosystems, Okinawa, Japan. 178 pp	1997
BOBLME Boundary	Data from Sea Around Us Project	
Marine Protected Areas (MPA)	World Database on Protected Areas (WDPA) 2009 dataset downloaded from World Database on Marine Protected Areas website (http://www.wdpa-marine.org/#/countries/about). This dataset was reviewed by in-country experts through BOBLME Project Workshop, the data incorporated from MPA data in ReefBase database and feedback from country contacts.	
Bathymetry	The bathymetry (ocean depth) data originates from National Geophysical Data Center TerrainBase Global DTM Version 1.0. This data represent an estimate of depth for	

	each 5-minute cell (~10km horizontal resolution).	
Country / Coastline	National Imagery and Mapping Agency (NIMA) - From the Vector Map (Vmap) Level 0, by the National Imagery and Mapping Agency (NIMA). Vector Map (VMAP) Level 0 is an updated and improved version of the Digital Chart of the World (DCM)	
Cities	A list of reef-relevant place names was compiled by ReefBase. This list inlcludes: cities, towns, bays, straits, coral reefs, dive sites and other types of locations, and was compiled using a variety of sources.	
River	Lehner, B. and P. Döll (2004): Development and validation of a global database of lakes, reservoirs and wetlands. Journal of Hydrology 296/1-4: 1-22.	
Administrative Level	Data from ESRI ArcGIS 9.2	

Geographic Coordinate System: GCS_WGS_1984
Datum: D_WGS_1984
Angular Unit: Degree

Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand are working together through the Bay of Bengal Large Marine Ecosystem (BOBLME) Project and to lay the foundations for a coordinated programme of action designed to improve the lives of the coastal populations through improved regional management of the Bay of Bengal environment and its fisheries.

The Food and Agriculture Organization (FAO) is the implementing agency for the BOBLME Project.

The Project is funded principally by the Global Environment Facility (GEF), Norway, the Swedish International Development Cooperation Agency, the FAO, and the National Oceanic and Atmospheric Administration of the USA.

For more information, please visit www.boblme.org